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Vol 4 No 2

MUSIC
SPECIAL FEATURE ISSUE:

All you need to know about music and micros Which software to buy.

Acorn's Music 500 reviewed

Yamaha's synth with an MSX micro thrown in.

Spectrum sound sampler.

PLUS: Thomas Dolby Competition

SIEL keyboards worth £2,000 to win!

CBM & Atari launch 8 new micros

COMMODORE and Atari have, between them, launched eight new computers at the Winter Consumer Electronics Show, held in Las Vegas earlier this week

Commodore showed two new micros, the C128 PC and the Commodore LCD Portable Atari launched four XE 8-bit machines and two ST models using the advanced 32/16 bit 68000 chip

The show also presented a 'new' Atari, under the control of ex-Commodore chief Jack Tramiel, which is committed to "becoming by far the lowest priced manufacturers"

The Commodore C128 has 128K Ram and 48K Rom, runs Basic 7 0 and uses a 6502 compatible processor, the 8502 The machine operates in three modes: 128K mode offering 128K Ram to Basic in two 64K switchable blocks, C64 mode, compatible with all C64 software, and CP/M mode using an in-built Z80 second processor to provide CP/M compatibility Display is 80 × 25 characters and Ram is expandable up to 512K The machine is planned to be available in the US in March/April at a price under $300 (around £265) Although the C128 does not have a built-in disc drive, Commodore announced the 1571 disc unit for the machine, 5¼ inch 0 5M (360K formatted) capacity double-sided drive which itself includes a 6502 processor, 2K Ram and 32K Rom The C128 also makes use of a new Commodore 'mouse' controller device

continued on page 5




SiM


Play with fire!


VIPER

)View

Eight new machines at January's Consumer Electronics show in Las Vegas Ye Gods!

If that doesn't shake things up a bit then nothing will

By far the most interesting of the new machines are Atari's two ST (Sam Tramiel?) models The use the same 68000 chip as Apple's Macintosh offering very similar features, at bargain prices $399 for the 128K version and $599 for the 512K machine

Initial reaction from US software houses was enthusiastic although most will hang fire to see if Tramiel can actually produce the machines fo April as he claims

The other interesting micro is Commodore's C128 which is Commodore 64 compatible, yet offers CP/M, all for under $300

Being C64 compatible, the machine is bound to extend the life of Commodore's existing C64 model and the C128 launch leaves the company's Plus/4 and C16 models rather out on a limb

Very little new software for either the C16 or Plus/4 was shown at CES and even Commodore admitted that the machines will have to be "repositioned in the market".

Whether they will be scrapped or their price will be dropped remains to be seen It is interesting too that Commodore has not shown either of its planned up-market micros, the IBM compatible or the 68000 Amiga, the latter obviously a competitor for Atari's new ST range

Whatever, the former, apparently, will only be launched in Europe, but no date has been given With the launch of Atari's ST machines and Commodore's C128, the future now looks very gloomy indeed for the Sinclair QL in the US

POPULAR Computing WEEKLY

Vol 4 No 2

)Presents...

)Futures...

Dicey business on Amstrad CPC464 . . . graphs on C64 . . . making sense of Roman numbers on Spectrum

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Computer Trade Association Magazine of the Year



Oric plans DIY Stratos

ORIC'S new Stratos home computer, due for launch on the Continent within the next two months could be launched in the UK in the form of an up-grade kit for existing Oric Atmos owners.

According to Bruce Everiss, Tansoft's managing director, "We are thinking of bringing out an up-grade kit to convert the Atmos into the Stratos, or IQ 164, as we plan to call it in this country, rather like the up-grade that was offered to Oric 1 owners for the Atmos.

"I can envisage a hardware price war between the big companies in 1985, and bringing out the Stratos as an up-grade may be the most viable way to do it.

"The up-grade will take the form of a "goodies box", in which we will put the disc controller, joystick interfaces, the ULA which decodes the Atmos's extra 16K of Ram to give a 64K machine, the bank switches to enable the Rom sockets to be used, and the Stratos's Basic cartridge. This could be available at the end of February."

Bruce stressed, however, that these plans were not definite. "If the market goes against our expectations, and remains orderly, then we will launch the Stratos as a new machine in the UK, probably under the name IQ 164."

No price has yet been indicated for the planned upgrade kit.

CBM and Atari machines

◄ continued from page 1

The company's second new machine is the LCD Portable. This uses another 6502 derivative, the 65C102 and has 32K Ram, 96K Rom and an 80 × 16 characters built-in liquid crystal display. The machine's 96K Rom includes built-in wordprocessor, spreadsheet file manager, notepad, monitor and terminal emulator software. No price has yet been fixed but US delivery is scheduled for March/April.

Atari previewed its fast ST range of 68000-based micros. Two machines are planned initially—the 130ST with 128K Ram and the 520 ST with 512K Ram. Both are very competitively priced—the 130ST is to cost $399 (about £350) while the 520ST will cost $599 (around £525). Both machines are scheduled for the end of April. The machines feature a 96K Rom, offering many of the advanced software features of machines like Apple's Macintosh in the built-in Digital Research-developed TOS operating system.

Also included in the Rom, which is expandable with plug-in cartridges to 327K, are a calculator, clock, Basic language and some built-in applications software. The machine's display features 512 colours.

Atari showed a range of printers and $3\frac{1}{2}$ inch disc drives to accompany the ST machines beginning at $150 (£130). A 10M hard disc unit is also planned for under $600 (£525).

As well as the ST machines Atari announced a range of four XE machines. These are a development from the company's existing 800XL 8-bit computer range and are fully software and peripheral compatible with the 800XL.

The XE machines are as follows. The 65XE is a repackaged 800XL with 64K Ram which will sell for under $120 (£105). It has built-in Basic, 4-voice sound and a 256 colour display with 11 graphic modes.

The 65XEM is similar to the 65XE with 64K Ram and is designed as a 'music' computer. In its basic form it has no music keyboard but offers 8 sound channels.

The 65XEP is a portable version of the XE with a built-in $3\frac{1}{2}$ inch disc drive and 5 inch monochrome monitor, again with 64K Ram.

Finally, Atari offers the 130XE, a version with 128K Ram. Like Commodore's C128, the Ram is organised in two 64K switchable banks.

US Gold offshoots launched

OCEAN and Centresoft are setting up two more joint companies to complement their existing US Gold, venture.

The companies, All-American Adventures and Famous Faces, will, like US Gold, publish exclusively American titles in this country.

"All future US Gold titles will be purely arcade-type games," explained Centresoft director Anne Brown.

Geoff Brown from Centresoft and David Ward of Ocean are currently in the US to buy rights to adventures for the All-American label, and games endorsed by celebrities for the Famous Faces label.

The first All-American Adventure title to be released in this country will be *Ultima 3*, from Sierra, in early February. At the same time, *Conan the Barbarian*, the first of the Famous Faces range, will be launched.

US Gold's current *Indiana Jones* title was originally intended for the Famous Faces series.

Games under the two new labels will be priced, like US Gold products, between £9.95 and £14.95 and will appear first on the Commodore 64 and Atari machines. "Wherever possible, we will be converting to the Spectrum as well," Anne continued. "We are planning to have around 80 titles available by the end of 1985."

Prism hits financial trouble

MICRO distributor Prism has run into cashflow problems causing it to try to renegotiate its credit terms with Sinclair Research.

Around 90% of Prism's turnover comes from distribution of Sinclair's hardware products, notably the Spectrum and Spectrum+. The company is blaming the pre-Christmas bulge in sales, poor sales of software and the closure of two magazines under ECC Publications, a Prism subsidiary for its plight.

"Having been very buoyant for the first two years of its existence, that buoyancy has now taken a puncture," said a spokeswoman for the company. "There is certainly a cashflow problem, but it's not an emergency."

Prism is hoping to extend credit terms with Sinclair from 28 days to 40-60 days. Its problems come at a difficult time for Sinclair which is planning a full stock-market listing within the next few months. However, it is unlikely that any financial problems at Prism would affect Sinclair's flotation.

Hackers hold convention in Hamburg

THREE hundred computer 'hacking' enthusiasts enjoyed a two-day orgy of hacking, information exchanging, and hack-related research in Hamburg, West Germany.

Around 30 computer terminals were in constant use at the Chaos Communication Congress, which held seminars on 'Laws for Hackers' among other topics.

Delegates came from as far away as New York to demonstrate how to tap into a US computer network.

The high point of the congress was an attempt to break into Citibank's central computer in Frankfurt. Sadly for the hackers, they were only able to make initial contact with the bank's computer network, but were unable to break into any of the files.

Letters

The weak spots

Recently, there has been much talk about 'hacking' and the extent to which hackers have probed into mainframes.

What I cannot understand is why 'hacking' has been dabbed as wrong – somehow a crime Surely, the only way security on a system can be improved is by it being broken in in the first place Hackers should in fact be thanked for helping to find the weaker spots in a system's security

Of course, a successful computer hacker *is* a potential threat to the security of information on a system, but few (certainly of those that have received media attention) have attempted to alter delete or sell information they have seen. Instead they have done the best possible thing – ie, alerted the company concerned of their weak security (plus the media, of course!)

After all, if I was to have files containing personal information about myself and my finances, for example, I would expect them to have the best possible security Wouldn't you?

M Harvey
Bradford-on-Avon
Wilts

Pascal support

Does anyone know how to make Hisoft's Pascal for the Spectrum support the Rotronics Wafadrive instead of the Microdrive?

J S Dowker
Department of Theoretical Physics
The University
Manchester

Killing the value

Since I bought my Spectrum I have probably bought around £350 worth of software for it

Yet, now, when I am trying to sell the machine no-one wants to know about my software for which I am trying to get around £100

Potential purchasers were all only interested in buying just the computer – figuring that they could pirate whatever software they wanted from their friends

It is not just the software houses that are losing out as a result of piracy but anyone who buys software Piracy is killing the resale value of any piece of software you buy

D R Halliwell
4 Heatherdale Close
Oxton
Brikenhead
Merseyside

A poor deal

I've just bought Legend's long-awaited and much publicised game, *The Great Space Race*

I was so astonished I fired up *Tasword* straight away to tell you about it It is not at all as I expected. I feel I have got a poor deal for my £14 95 – getting something which appears on the screen like a £5.00 game in a flashy box

A year on from *Valhalla*, a reasonable game at the time, one expects something really special, not 39K of code nearly 16 of which is Basic Even the *Break* key is not protected!

I suppose it's my own fault for not waiting for the reviews in your magazine

Incidentally, the manual with the game says that the game is incompatible with microdrives and full size printers This is nonsense, after *Breaking* the program it can be directly saved to microdrive, and my Brother EP22 printer works once the appropriate channel is opened.

R Pitman
79 Whitewood Way
Worcester

Dimension error

Congratulations to Peter Patton on his excellent *Microfile* program in Issues 46 and 47 for the Amstrad

Unfortunately there appears to be an error in the dimensioning of the data array leading to a 'Subscript out of range' report when a very large amount of Data is held, caused by not taking into account that the free memory is affected by the length of the existing file

This is easily corrected by changing lines as follows

```
1870 INPUT #9,ft
1900 INPUT #9,j.GOSUB 2350
2380 DIM       dat(free+j,y).
RETURN
```

The program can be further enhanced by the addition of a printer option to the *Search* and *Browse* sections One way of obtaining this which will print out the whole of the entry shown can be obtained as follows although a different layout of the fields can readily be obtained by the order in which the elements are called. Change lines

```
870 GOSUB    2310 LOCATE
5,23 PRINT   "(Q)uit, (F)or-
ward, (B)ack (J)ump, (D)e-
lete, (A)mend, (+)=Add,
(P)rint "
1260 GOSUB   2310·LOCATE
20,23 PRINT  "(P)rint, (Q)uit,
or (R)e
1320 GOSUB   2310.LOCATE
10,23 PRINT       r;(P),r,"rint,
",r,"(Q),r,"uit,            or
",r,"(C)",r,"ontinue Search ",-
run  Search  ", 1=1 GOSUB
2160 m=UPPER$(m)
```

And add Lines

```
1045 IF m="P" then GOSUB
2500 GOTO 870
1335 IF m="P" THEN GOSUB
2500·GOTO 1320
2500 REM ********** PRINT
************
2510 FOR t=1 to y
2520   PRINT   #8,dat(x,t),"
",.NEXT
2530 PRINT #8
2540 RETURN
```

D G Shedden
Lomond
The Green
Belchamp St Paul
Sudbury
Suffolk

You can contact me through Prince Philip's personal mailbox

Broken promises

It would appear (December 20 issue) that Sinclair now has no intention of honouring Nigel Searle's promise to cut the price of microdrive cartridges

We long-suffering Sinclair users have grown used to waiting for the latest wonder machine

Do we now have to get used to them welshing on their promises as well?

I am sure that many people must have bought Spectrums and QLs on the basis that a considerable decrease in the price of cartridges would at last make Microdrives a reasonable alternative to floppy discs

It seems that once again we have been misled.

In my opinion Sinclair are compensating themselves for a relatively small profit margin on the QL by maintaining a ludicrously high price for the cartridges After all, once customers have committed £400 to buy the computer, they are then obliged to buy the cartridges

Is this the real reason why there is no cassette interface on the QL?

A Yarwood
61 The Ridge
Marple
Stockport

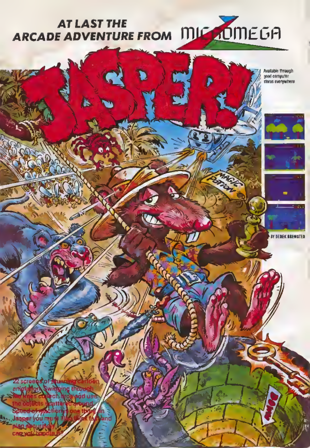
All the extras

About a week ago I bought myself a Christmas present of that excellent game of *Chess* by Psion

Then it occurred to me I had just spent £20 on a program You can buy a video cassette with a feature film on it for about the same, which has I don't know how much more black plastic case, and yards and yards of tape, than in your good old Spectrum and QL microdrive cartridge

Sinclair may sell computers to the masses at hard to beat prices, but he certainly gets his money back on the extras that he knows we can't do without

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ROTRONICS WAFADRIVE FDR 48K SPECTRUM/ SPECTRUM+

Dual 128K storage Fast access Centronics and RS232 interfaces And now FOUR free wafers from SMT including the Spectral Writer word processing package We're now including a free 16K 64K and 128K wafer with each Wafadrive All this makes the price of £129 95 (inc. p & p) even more attractive



The Rotronics Wafadrive has now proved itself as the storage system that offers more. More features more reliability and more speed. Its micro interface, two 128K drives, RS232 and Centronics ports are all contained within one attractively styled compact unit. Wafadrive achieves very fast loading and saving but not at the expense of reliability which is on a par with floppy disk.

The fully interchangeable wafers are available in three sizes – 16K 64K and 128K Low capacity wafers are most suitable for program development as they offer faster access High capacity is most suited to general data storage Loading rate is well over ten times as fast as cassette!

Software selection is ever growing – see list below for details A full colour brochure on Wafadrive and up to the minute software and accessory information is available

Look to SMT for the best deal on all Rotronics peripherals

ROTRONICS DX-85 DOT MATRIX PRINTER

High quality and high speed The DX-85 prints bi directionally at 100 cps logic seeking It offers a 96 character set at 10/12 5/16 5 cpi which extends column width up to 132 characters Programmable typefaces including extended and italic Centronics interface standard and free dust cover supplied Options include typewriter ribbon adaptor, telex roll holder RS232 serial interface and sheet feeder

See our special price when bought with Wafadrive This offer also applies to previous SMT Wafadrive customers (proof of purchase required).

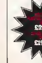


ROTRONICS PORTABLE CASE

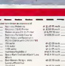
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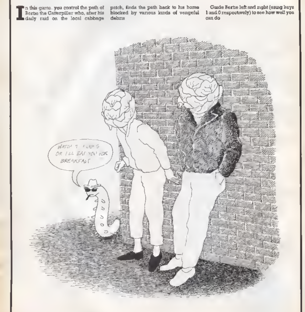
VIC 20 and CBM 64 are registered [illegible] Machine

Pupae Peril

Can you find your way back home in this game of Pupae Peril by P Sayer and M Lawton?

In this game, you control the path of Bertie the Catterpillar who, after his daily raid on the local cabbage patch, finds the path back to his home blocked by various kinds of vengeful debris

Guide Bertie left and right (using keys 1 and 0 respectively) to see how well you can do



Within the program listing, underlined lower-case leters within quotation marks (ie "a") denote user-defined graphics.

```
  1 REM Berty bug By P.Sayer M.Lawton
  2 GO TO 250
  5 BORDER 0: PAPER 0: INK 7: BRIGHT 1: CLS
 10 PRINT AT 10,0;"do you want instructions (y/n)": IF INKEY$="y" THEN  RUN 400
 20 IF INKEY$="n" THEN  GO TO 510
 22 GO TO 10
 30 LET f=0: LET a=12: PAPER 0: BORDER 1: CLS
 40 PRINT  BRIGHT 1; INK 3;AT 21,INT (RND*31);"c": PRINT  BRIGHT 1; INK 4;AT 21
,INT (RND*31);"c"
 50 POKE 23692,0: PRINT  INK 0;PEEK 23692
 60 IF SCREEN$ (8,a)<>" " THEN  GO TO 150
 70 IF INKEY$="1" THEN  LET a=a-1
 80 IF INKEY$="0" THEN  LET a=a+1
 90 PRINT  INK 7; BRIGHT 1;AT 8,a;"a"
100 PRINT  INK 2; PAPER 6;AT 21,0;"d": PRINT  INK 2; PAPER 6;AT 21,31;"d"
110 LET f=f+1: IF f=700 THEN  GO TO 190
120 GO TO 40
150 PAPER 0: BORDER 4: CLS : FOR t=0 TO 10
160 FOR n=1 TO 7: INK n: BRIGHT 1: PRINT "+ you wally you hit an obstacle +": P
OKE 23692,255
165 IF t>=10 THEN  GO TO 550
170 NEXT n: NEXT t
180 GO TO 150
190 PAPER 1: INK 6: PAPER 0: BRIGHT 1: CLS : PRINT AT 10,3;"WELL DONE YOU HAVE
GOT HOME"
210 FOR f=0 TO 700: BORDER 2: OUT 34300,20: BORDER 3: OUT 34300,20: BORDER 6: N
EXT f: GO TO 550
250 FOR f=0 TO 7: READ x: POKE USR "a"+f,x
260 DATA BIN 00111100,BIN 01111110,BIN 01000010,BIN 10000001,BIN 10100101,BIN 0
1011010,BIN 01100110,BIN 00011000
270 NEXT f
280 FOR f=0 TO 7: READ x: POKE USR "d"+f,x:
290 DATA BIN 11111111,BIN 11000011,BIN 10100101,BIN 10011001,BIN 10011001,BIN 1
0100101,BIN 11000011,BIN 11111111
300 NEXT f
310 FOR f=0 TO 7: READ x: POKE USR "c"+f,x
320 DATA BIN 00000011,BIN 00000011,BIN 00011100,BIN 00111100,BIN 01101100,BIN 1
1011000,BIN 01110000,BIN 00100000
330 NEXT f
340 FOR f=0 TO 7: READ x: POKE USR "b"+f,x
350 DATA BIN 00111100,BIN 00101010,BIN 01100110,BIN 10100101,BIN 00011001,BIN 0
1010010,BIN 01111100,BIN 00111000
360 NEXT f
390 GO TO 5
400 BORDER 0: PAPER 0: CLS : PRINT  BRIGHT 1: INK 3;AT 0,9;"-------------"
410 PRINT  BRIGHT 1; INK 6;AT 1,10;"BERTY BUG"
420 PRINT  BRIGHT 1; INK 3;AT 2,9;"-------------"
430 PRINT  INK 7; BRIGHT 1;AT 4,1;"By Michael Lawton 1984";AT 5,0;" & Phil Sa
yer"
440 PRINT  INK 5; BRIGHT 1;AT 7,0;"You (Berty the caterpillar)have just made yo
ur daily raid on thelocal cabbage patch.You are now on your way home.you have ju
st  turned a corner and ... But waitwhat is this its COLIN cabbage  and all his
friends ( including SIMON the spray can & WALLY wall),and BOY do they look angry
 .  Soon you find they are after youbecause you kept eating all of  their friend
s for tea.You decide you had better move fast....."
460 BEEP 0.1,5: BEEP 0.1,4: BEEP 0.4,4: BEEP 0.1,5: BEEP 0.1,4: BEEP 0.4,4: BEE
P 0.1,5: BEEP 0.1,4: BEEP 0.4,4: BEEP 0.8,12: BEEP 0.1,12: BEEP 0.1,11: BEEP 0.4
,9: BEEP 0.1,7: BEEP 0.4,5: BEEP 0.1,5: BEEP 0.1,4: BEEP 0.4,2: BEEP 0.4,2
470 BEEP 0.1,4: BEEP 0.1,2: BEEP 0.4,2: BEEP 0.1,4: BEEP 0.1,2: BEEP 0.4,2: BEE
P 0.1,4: BEEP 0.1,2: BEEP 0.4,2: BEEP 0.8,11: BEEP 0.1,11: BEEP 0.1,9: BEEP 0.4,
7: BEEP 0.1,7: BEEP 0.1,5: BEEP 0.4,4: BEEP 0.1,4: BEEP 0.1,2: BEEP 0.4,0: BEEP
0.4,0
480 BEEP 0.1,12: BEEP 0.1,12: BEEP 0.3,11: BEEP 0.3,14: BEEP 0.3,8: BEEP 0.3,11
: BEEP 0.3,12: BEEP 0.6,4: BEEP 0.1,12: BEEP 0.1,12: BEEP 0.3,11: BEEP 0.3,14: B
EEP 0.3,8: BEEP 0.3,11: BEEP 0.3,12: BEEP 0.3,12: BEEP 0.1,11: BEEP 0.1,9: BEEP
0.1,7: BEEP 0.1,5: BEEP 1,4: BEEP 1,3: BEEP 0.5,4: BEEP 0.5,5: BEEP 0.5,4: BEEP
0.5,5: BEEP 0.8,4
491 PRINT  FLASH 1; INK 2; PAPER 6;AT 21,8;" PRESS ANY KEY "
500 PAUSE 0
510 BORDER 0: INK 0: PAPER 5: CLS
520 FOR n=0 TO 21: PRINT AT n,0;"                                "
530 PAUSE 5: NEXT n
540 GO TO 30
550 BORDER 1: PAPER 5: CLS
560 FOR x=0 TO 21: PRINT  INK 1; PAPER 5;AT x,0;"dd": PRINT  INK 1; PAPER 5;AT
x,30;"dd": NEXT x
570 FOR x=2 TO 29: PRINT  INK 1; PAPER 5;AT 0,x;"d": PRINT  INK 1; PAPER 5;AT 1
,x;"d": PRINT  INK 1; PAPER 5;AT 21,x;"d": PRINT  INK 1; PAPER 5;AT 20,x;"d": NE
XT x
580 PRINT  INK 0;AT 7,7;"you took ";f;" steps": PRINT  INK 0;AT 8,9;"towards ho
me"
590 PRINT  INK 0;AT 11,5;"The computers comments:"
600 IF f<=100 THEN  PRINT  INK 1;AT 12,7;"Absolutely pathetic"
610 IF f<=200 AND f>=100 THEN  PRINT  INK 1;AT 12,12;"Rubbish"
620 IF f<=300 AND f>=200 THEN  PRINT  INK 1;AT 12,10;"feeble Mate"
630 IF f<=400 AND f>=300 THEN  PRINT  INK 1;AT 12,12;"Garbage"
635 IF f<=500 AND f>=400 THEN  PRINT  INK 1;AT 12,5;"A bit Better"
640 IF f<=600 AND f>=500 THEN  PRINT  INK 1;AT 12,3;"WELL not too bad"
650 IF f<=699 AND f>=600 THEN  PRINT 1;AT 12,4;"NOT bad for a beginer"
660 IF f>=700 THEN  PRINT  INK 1;AT 12,9;"Okay show off": PAUSE 0: GO TO 5
670 BEEP 1,-5: BEEP 1,-5: BEEP .5,-5: BEEP 1,-5: BEEP 1,-2: BEEP .2,-05: BEEP 1
,-3: BEEP 0.4,-5: BEEP 1,-5: BEEP 0.4,-6: BEEP 2,-5
680 PAUSE 0: GO TO 5
```

NEW

– Commodore 64 –

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The main chance

***Graham Taylor** talks to electro-rock band – Mainframe*

After Frankie goes to Hollywood shot up to the top of the music charts with *Relax* it didn't take long before criticisms of the band began to appear in the music press.

Charges that the band were manufactured in the studio, that they had little musical ability and that they were largely the result of producer Trevor Horn being very clever with an array of synthesizers and computerised musical instruments, were all levelled against the band.

However unfair these criticisms may be, the fact they were made to all is of significance.

What they imply is that somehow computers let you 'cheat'. Have micros advanced so far that the importance of musical invention can somehow be reduced by technology?

But what has all this to do with a young new band called Mainframe? Mainframe is Murray Munro and John Molloy who together are using much of the same kind of technology as the Trevor Horns of this world, but at a level of expenditure that a small amateur and semi-professional group might afford.

It is with bands like Mainframe rather than studio superstars like Trevor Horn that the real test of new musical technology occurs. How is the best used on a day to day basis? What does it add or take away from musical creation?

John and Murray began by playing, respectively keyboards and guitar in a five-piece rock band called Limeshare. Murray taught himself guitar in the way most rock guitarists do, picking it up as he went along, John learnt the piano to Grade 8 (that's pretty goodish) in the usual classical way. They left to form Mainframe which despite a vaguely esoteric tech image was always intended to be a viable gigging band. The base and drum parts were played by a four track tape deck, its spools turning ominously throughout a set – it was a technique also used by Orchestral Manoeuvres in the Dark for a time.

The technical developments that have substantially reshaped Mainframe's sound since then began as a venture into computer graphics.

John explained, "We had an Apple we were using and at a user group we met two people – Colin Holgate and David Green – and we began working with them to create computer garaphic shows for our stage act."

The computer graphics were well recieved and grew in complexity. "David reached the point where he wanted to take the sounds we were making and directly input them into the computer and turn them into graphic effects. The conventional tape interface proved not up to the task and a special board of electronics had to be constructed to convert sound input to graphics."

Murray told the slightly bizarre story of what happened next. "Dave sent in an input wave and instead of using it to create graphics sent it out again in an altered form. We were sent it to have a listen to and after two weeks we finally all got around to sitting down with a tape deck – it was awful." Dave was consulted.

"He told us the original sound he had sampled was from a cassette tape – no wonder it was awful. We tried again then from a decent sound source and it actually sounded fine."

The end result of all this unplanned development was a sound sampling system that did much of what studio systems costing hundreds of thousands of pounds can do. Well, pretty much, anyway.

The system, a board which plugs into any Apple II was named the DS 3 and was shown around and received much acclaim from such luminaries as Thomas Dolby's keyboard player and Dave Stewart (of *It's My Party* fame). More importantly the system has picked up a lot of sales from the smaller music studios who can't afford the likes of a Fairlight – as used by Frankie – and costing £30,000 at the last count.

The ubiquitous Midi interfacing system will be added to the system soon.

Murray Monro (left) and John Molloy

"Midi is basically a very good thing but the standard is not quite a standard yet. You can still connect together two keyboards by the same manufacturer and the sustain pedal on one keyboard won't work the other, no matter what you do.

"Nevertheless it'll be a useful addition to the DS 3, mainly because people will be able to use their favourite keyboard to play the sounds. For example, a lot of people want to connect a Yamaha DX7 up to it."

All this ingenious technology gives Mainframe and the other bands who use similar systems a great deal of freedom.

Think of what it implies. Any sound you can hear from dog barks (a popular choice, that) to a whole orchestra playing, to breaking bottles to thunder and lightning can be stored, altered and played back on a keyboard at various pitches.

But what should be done with this extra freedom, and what use actually is being made of it? John commented, "In terms of sounds I think it's fair to criticise much of what has been done so far with computers. What's happened is that everybody has found the Fairlight at the end of the studio, but either hasn't wanted or hasn't had time to investigate sampling properly. Consequently, they tend to use the sounds that come with the machine instead of experimenting with it.

"From our point of view that means that with only our DS 3 system we produce sound – comparable with stuff produced on much more expensive equipment – that seems like dozens of musicians including an entire brass section."

Proof that technology needn't take the invention and quality out of music is to be found in Mainframe's recent record *Into Trouble With the Noise of Art*, a 12 inch which uses the DS 3 system almost exclusively to create the sounds, yet produces music of some wit and thought.

A new track they are working on now can truly be said to include everything and the kitchen sink. "There is everything in it including a bit of us at the kitchen sink" – a recording moment to treasure.

The future for Murray and John looks interesting – YYY records (Ying Yang Yumm) their own record label which put out the *Noise of Art* record, will release follow ups in a broadly experimental area.

But another track I heard, despite the sampling and bizarre noises, revealed a strong sense of hooks and choruses. It ought, I thought, almost be commercial. What did that mean, I asked Murray. "We'd like a hit single like everyone else, you know," he smiled.

If the technology of music interests you listen to *Into Trouble with the Noise of Art* and try comparing it with the record which it parodies called *Into Battle with the Art of Noise* which features Fairlights and the like.


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Hardware Review

Controlled

Hardware Music 500 **Micro** BBC **Price** £199 **Supplier** Acorn Computers, Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN

Acorn have always claimed an impressive line-up of peripherals for the BBC micro, but until now the professional musician has had to look elsewhere for computer based synthesizer control Not any longer The *Music 500* from Acorn is an add-on synthesizer for the BBC which frees the musically minded from the limitations of the BBC's sound chip and gives them such joys as FM and ring modulation. But the real test of the *Music 500* is in its control language, *Ample* (Advanced Music Programming Language) The claim is that, here, at last, is an authoring language which offers easy control over the complex structures offered by a pro-synth

So what do you get for £199.00p? The hardware is contained within a slimline disc-drive size case and connects via the 1MHz bus of the BBC The only other visible connection on the synthesizer is a five-pin DIN socket which is an audio output for connection to an amplifier. Completing the package is a comprehensive user guide, and a tape containing the *Ample* language and several demonstration pieces.

Now there's only one ingrediant missing from the above list. Yes a keyboard! Acorn in their wisdom have decided that a keyboard is not essential to the operation of the synth, such is their confidence in the power of the *Ample* language Though, as you will see, *Ample* is indeed a fine authoring language, it in no way negates the need for a keyboard and it is a pity that users will have to wait a couple of months for the keyboard to appear I found it a very annoying feature of an otherwise impressive product

So what exactly is *Ample* controlling? Well, the 500 has 16 sound channels and the system has eight voices This means up to eight notes can be played simultaneously and initially each voice has two channels assigned to it By combining channels, different effects such as ring modulation, FM. and synchronisation can be achieved

Up to 13 waveforms can be held in memory by the 500 and thus can be used for harmonic synthesis, by telling the system the various strengths of the first 16 harmonics or creating waveforms geometrically by specifying the shape of the waveform point-by-point

Starting with *Ample* is relatively easy though don't expect any great performances for a while *Ample* is rather like a *Basic* language for musicians and is entered either as a direct command or as sequence of commands in a program listing All music notation is entered from the QWERTY keyboard For instance, individual notes are entered as they are written (CDEFGAB) and the direction of the pitch is shown by either lower or upper case lettering, where the former is going down and the latter up Other straightforward controls over duration and tempo are just as easily performed

Ample has a large set of built-in words which control the fundamentals of changing sound. But the real power in the language is that the user can build his own definitions This means the user can create his own effects, arrange a certain part, create new wave or envelope affects, instruments or note sequences and then call it up by name, therefore defining his own procedure This w then another *Ample* word which is executed in the same way as a built-in command

Couple all this with the ability to run events concurrently and you have multi-part music at your fingertips Well, in theory It all depends on your enthusiasm and patience for *Ample* It's without a doubt a very powerful control language but it is also time consuming You'll either love it or hate it. I'm gradually learning to love it and appreciate the control structures it offers

So is it worth the expense? If you already have a BBC, a most emphatic YES! However, if you are considering buying a micro plus synthesizer then Yamaha's CX5 is a strong contender Acorn has tackled the problem of micro-control totally differently to the CX5 On a quick comparison the CX5 would win easily The major criticism of the 500, besides the lack (at the moment) of a keyboard, w the fact that Acorn have made an attempt to use the graphics capabilities of the micro to assist the user Yes, I know that the old Beeb eats up memory as soon as you draw a matchstick man, but surely someone could have exercised some imagination. *Ample* is great but I would prefer to enter music on a stave and not by typing in letters at a keyboard. This leads on to the other major criticism that unlike the CX5 the 500 is not instantly usable

However, at the end of the day the contest is very close The hardware of the 500 is excellent and offers possibilities beyond the limitations of the FM based CX5 As it stands the *Music 500* w a pro-musicians tool and hasn't the instant appeal of the CX5 which will go down well with the amateur dabbler *Ample* is worth learning with much scope

Overall I was impressed by the quality of the sound and the entire package It w a most welcome addition to my BBC

Jeremy Vine



No clone

Hardware CX5ME **Prices:** CX5 – £449.00 Mini Keyboard – £85.00 or Full-size keyboard – £165.00 Software *Roms* – £35.00 each Single cartridge adaptor – £19.00 Data memory cartridge – £65.00
Supplier Yamaha-Kemble Music Ltd, Mount Ave, Bletchley, Milton Keynes

Once you've seen one MSX machine, you've seen them all. A statement that is generally true unless you have a Yamaha CX5. It's no ordinary MSX micro and this is immediately noticeable by its price. For those acquainted with the DX series of synthesizers, Yamaha have produced a fully-fledged micro that conforms to the MSX specification but offers a big plus in the inclusion of an 8-note polyphonic FM synthesizer, that virtually makes the DX9 obsolete, as it rivals the DX9 in almost every feature for a few hundred pounds less in price!

Is it a computer plus synth or synthesizer plus micro? Well, Yamaha have designed the CX5 for both the amateur and pro-musician and are retailing the machine almost exclusively through music shops rather than computer stores. The basic system includes the FM synthesizer and it is not possible to buy just the MSX computer and then upgrade. The complete package comprises the micro with the synth module built into the underside of the micro, a piano type keyboard (either mini or full-size) which connects to the micro and a rather bulky separate power supply unit.

A look around the micro reveals the usual array of ports for printer, joystick, cartridges, TV, cassette, etc. In addition there are five sockets which are part of the synth module giving a pair of Midi *In-Out* sockets, a pair of phono audio outputs (left and right) and connector for the music keyboard. One thing that stands out is the non-standard implementation of the Midi interface, which is parallel rather than serial. However, in all other respects the micro appears to be the standard MSX job except that it comes with 32K Ram (on the low side against other MSX micros).

I won't dwell too much on the MSX features as they are well known by now. The keyboard (that is the QWERTY keyboard) is pleasant to use and the micro performed in the way any other MSX machine behaves. The departure point in this beast is a built-in software package to access and make use of the FM synthesizer.

By simply typing in *Call Music*, the screen then displays five main blocks of information which allow control over the polyphonic and monophonic voices. The keyboard is immediately playable and there are 46 preset voices available to the user. Brass, electric piano, strings, wind and a host of other sounds are at the user's fingertips and the effects have to be heard to be believed. This is, of course, one of the outstanding features of FM synthesis and Yamaha couldn't have made it any easier to access these sounds.

It's possible to split the keyboard at any point so that one hand can play a polyphonic voice and the other, monophonic. In addition these two voices can be separate, enabling a different instrument to each voice.

The second main block menu is the rhythm section and allows an automatic rhythm accompaniment. Other features include record and playback of music from the keyboard and alteration of the voice parameters. The built-in package is far from mind-blowing but is a gentle, simple introduction and is especially good for those who want to play a few quick notes with a host of instruments.

The real stunner about this system is the art of the possible, or to be more exact, what Yamaha has made possible for the musician. Yamaha has taken full advantage of the micro to make control of the synth a doddle. To compliment the system, a range of software cartridges are available that extend the capabilities of the micro. In particular, they have made the logical step of using a micro to display visual information about the synthesizer.

The first Rom cartridge I selected was the *FM Music Composer (YRM101)*. Unlike the Music 500 from Acorn (which is reviewed elsewhere in this issue), music can be entered in standard musical notation on staves shown on-screen. Up to eight parts can be played simultaneously and the music can be played back either through the Midi interface and/or the internal synth.

The criticisms of this package, and they are far from major, is that only one part is visible at any one time and the less advanced musician would have problems synchronising parts. Entry of the music is not as straightforward as it could be and takes some getting used to. Criticisms aside, the program is a delight. Being able to see and use musical notation is a very attractive prospect and once the initial difficulties of key-entry are solved, multi-part harmony with different instruments is childs play. Each part can be dumped to a printer for a permanent record and compositions can be saved to the cassette recorder. All in all, a great package.

I mentioned earlier that the built-in software had its limitations and to remedy that problem, Yamaha have produced the *FM Voicing Rom (YRM102)*. One of the complicated elements of FM is that there are many (in this case over 60) parameters that can be altered. On the DX synths this was never an easy job but with the CX5 and the voicing Rom, life is certainly easier. This package allows the user to change existing voices or create new ones by presenting all the various parameters of the voice on one screen.

Changing the parameters is dead easy by moving the cursor around the screen. But no matter how much easier the task is made, an appreciation of how sound is created and in particular how FM synthesis works is required. The manual does a good job here and for both the amateur and professional this cartridge is a must for exploring the almost infinite range of sounds possible.

With the Basic programmer in mind, the *Music Macro Rom (YRM104)* extends the range of Basic commands to allow the synthesizer to be controlled from Basic programs. I suspect that this will be the least used package as most owners will find their musical needs adequately catered for by the other software. But it's good to see how much thought Yamaha have put into this system and control of all the hardware from Basic, including control of the Midi interface, is a necessity to complete the system for all possible users.

The fourth and final cartridge avail-

able at present is aimed at owners of the DX7 If there's one thing more difficult than altering the CX5's voicing parameters, it's the DX7! In a similar fashion to the FM voicing cartridge, the *DX7 Voicing Program (YRM103)* displays graphically the different parameters and allows on-screen editing which is relayed via the Midi interface to the DX7. There will probably be many DX7 owners who will give serious consideration to purchasing the CX5 just to ease their nerves It sure takes the mystery out of that LCD display!

After a few weeks of using the CX5, I am still as impressed with it as the first time I saw (and heard) it It is a remarkable package and full marks to Yamaha for a well thought-out, well designed machine If there are criticisms to be made they are not against the system, for that is without a doubt excellent, but rather the marketing policy of Yamaha in Britain.

As I indicated earlier the system is only available with the built-in synth module and it is thus which places the micro outside most people's financial reserves, and indeed those many music amateurs Thus is a great pity It would have been preferable to see the CX5 available as a micro, with the FM synth unit available as an upgrade I can understand Yamaha wishing to market the CX5 with emphasis on the music aspect but they are alienating many potential micro purchasers who can't afford the entire package but would in the long-term wish to have the addition of a pro-synth unit and keyboard Come on Yamaha, surely you want to sell more of these machines?

As far as the pro-musician is concerned the CXS is a bargain To get almost the entire facilities of a DX9 plus a micro for three hundred pounds less is almost too good to be true The only other major competition in the same price bracket is the BBC plus Music 500 Without a doubt the CX5 is a far more friendly package to use and at present offers more than the Acorn system with the exception of the limitations of FM synthesis, if you consider that a limitation exists. As I pointed out in the Music 500 review, the control of a synthesizer has been approached from two different directions The Yamaha method is far more appealing to the first time user and is the friendlier face of software The Acorn approach is far less friendly yet very sophisticated and coupled with excellent hardware For ease of use though, Yamaha wins

Overall, I can't sing the praises of this system highly enough If the first batch of software is anything to go by, the future developments of this system must be very bright indeed and Yamaha have hinted strongly at new packages and peripherals taking the system even further, but no firm details have been released as yet I can't wait!

Jeremy Vine

Simple sample

Hardware Digital Sound Sampler **Micro** Spectrum **Price** £49 95 **Supplier** Datel Electronics, Unit 8, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent.

While the music world has been familiar with the idea of sound sampling for a couple of years, the necessary technology hasn't been cheap enough to apply to home computers until quite recently Still, systems like the £20,000 Fairlight Computer Musical Instrument, the £500 Greengate DS3 Sampling System for the Apple computer, and Datel's new £50 device, have a good deal in common

Plugging into the Spectrum's user port, the Digital Sound Sampler (DSS) can take any sound input up to around two seconds in length, coming either from the small microphone supplied or from a line level input, and reduce it to digital information Recreating the sound at different pitches by putting it through a digital-to-analogue converter and amplifier is then easy – the device just "plays back" the sound at a different clock rate.

The unit worked first time, though some adjustment of input levels was necessary. The four programs supplied on tape allow you to sample and replay a sound in many ways

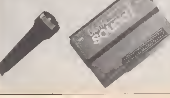
A sample can be replayed forwards or backwards at a variety of pitches using the keys 1 – 8 on the Spectrum A frequency chart can be plotted, or the sound can be looped with a progressively faster repeat, or rising pitch repeat. The DSS will also act as a primitive echo unit Four short sounds, ideally drum-type noises, can be recorded sequentially, then played back with keys 5 6 7 and 8

There are also programs which turn the Spectrum's QWERTY keyboard into a music keyboard – though it's very difficult to get an acceptable standard of playing out of it It's much better to leave any serious composition to the sequencer program, which allows you to store 1000-note tunes and play them back at any speed There's also a program to help you incorporate sampled sounds into games

Overall, the Datel Digital Sound Sampler is a fascinating toy for musicians interested in sound sampling techniques, or for novelty seekers who can afford £50 for a gimmick which may lose its appeal after you've heard your Spectrum saying "hello" in tones from a deep bass to a high soprano.

However, since the software is fairly primitive and badly needs replacing with a fully integrated, machine-code program, and since there's no way to interface the DSS with a real music keyboard of any kind for real musical applications you should keep saving for that Apple/DS3 system.

Chris Jenkins



Face the music

Gery Hermen *sounds out the music software programs for your micro*

This round-up covers software designed to turn your computer into any sort of self-contained music machine

There are roughly two approaches – one uses the computer as a compositional aid and the other uses the computer as an instrument, a sort of synthesizer

Inevitably, the computer-as-synthesizer software is largely dependent on the quality of the hardware it is implemented on the particular micro – that is, it depends on the programmable sound generator the computer uses

In this respect, the Commodore 64 has the edge on all other machines, while an unexpanded Spectrum is pretty useless Every other machine (with the exception of Yamaha's MSX model, the CX5M) falls between these two extremes.

I have avoided the CX5M in this list, since it is, in effect, a computer plus synthesizer I have also not included Midi software or anything similar requiring the use of a separate synthesizer or rhythm machine Neither have I mentioned sound sampling devices

Software is listed by machine and is, roughly, in order of quality – a judgement which combines subjective opinion and an assessment of cost versus features

Atari 800/800XL

Music Composer (Atari) A neat cartridge-based package which suffers from the sound quality of the Atari programmable sound generator (PSG), but makes up for that with excellent graphics and the ability to write four-part compositions. Comprehensively, if densely, documented and pleasant to use

BBC Model B

The Synth (Musicsoft) A disc or tape-based set of programs allowing comprehensive and easy control of BBC sound facilities Best as a performance program, but includes 'recording/sequencing' facilities for composition Doug Tate, who produced *The Synth*, also sells a suite of programs called *Keyboards* and one called *Music Tools*, which are extremely useful as guides to musical techniques with the BBC

The Music System (Island Logic) A beautifully packaged and presented suite of programs aimed squarely at composers. The icon graphics are exceptional and the facilities for notating and printing out compositions are unparalleled.

Acorn Music 500 (Acorn/Hybrid Technologies) A hardware-based system which utilises a specially written music composition language A powerful compositional tool which gives high-quality digital sound not using the BBC's own PSG Difficult to use and expensive, but probably worth having

LVL Echo 1 Add-on keyboard with software. Very cheap at around £100, but unfortunately it seems to be all but unobtainable

BBC Music Processor (Quicksilva) Turns your BBC into a mock-up synthesizer and four-track tape recorder (a very good implementation, this latter A cheap and cheerful piece of software, well worth having for amusement, it might also prove a useful addition to the musician's armoury

Music Synthesiser (Bug Byte) A disappointing program geared to composition rather than real-time performance I found it extremely tedious to use

Drum Kit (Quicksilva) A fairly good implementation of a drum machine on the BBC which would be enourmously improved with the addition of external amplification. A more interactive approach would have helped, too

Beebsynth (Clares Micro Supplies) Aimed at the sound experimenter who wishes to explore the BBC's sound capabilities Useful.

Music Maestro (GTM Computers) Good on sequencing, indifferent in most other areas

Commodore 64

Music Master (Supersoft) Entertaining and generally well-constructed program, most useful for real-time performance and for setting up sounds to be used in your own programs Unfortunately, the sequencing facility is disappointing

Synthy-64 (Abacus/Adamsoft) American program which allows you to compose by means of basic-like programs Very powerful and fairly easy to use The documentation could be better, but this program is heartily recommended to composers

MusiCalc 1 (Waveform/MusiCalc UK) The first in a suite of programs designed to cover all the musical bases Originating in the US, *MusiCalc 1* is essentially a sound modification program with some compositional features These latter are quirky, to say the least, but the sound modification is very well done. A good introduction to the Commodore 64's capabilities.

Music Maker (CBM/Music Sales) You get a plastic clip-on keyboard, an idiot's guide to playing keyboard and some simple if quite amusing software Not versatile, but very easy to use.

Ultisynth 64 (Quicksilva) An overly complicated piece of software, bearing some market similarities to both *Music Master* and *MusiCalc 1*, but not as good as either of them

Microsound 64 (Autographics) A keyboard add-on plus software which is, even now, being up-dated. Well worth investigating since it offers all the C64's facilites and allows real-time performance and step-time sequencing of a fairly good quality. If the promised real-time sequencer and sampler programs live up to expectations, it could be an unbeatable system

CMK 49 (Siel) Another add-on directly competing with the *Microsound* So far, I have no precise information about this very new product, but Siel is a reliable synthesizer manufacturer with a keen eye to the home micro market

LVL ECHO 1 A version for the Commodore See under BBC Model B entries

Sinclair Spectrum

Music Typewriter (Romantic Robot) A compositional program which uses the Spectrum keyboard and an overlay to enter notes Obviously limited by the Spectrum's sound capabilities, but nonetheless a good introduction.

Music Master (Sinclair Research) Turns your Spectrum into a gloriously monophonic home organ. Very quiet and only worth having if you can't get anything else.

Three Channel Sound Synthesizer (DK'Tronics) Hardware add-on allows the Spectrum to produce three channels of sound, like a BBC Includes a *Music Designer* program, which is a joystick controlled composer/sequencer.

Trichord (Newtech Developments) Hardware add-on, incorporating composer package, internal amplifier and pre-programmed sounds on firmware Competitively priced and versatile.

Sound Generator (Ricoll Electronics) Rather expensive (at £45 95) but this hardware add-on does include an internal amplifier and programmable filter Ricoll's products are usually reliable and the filter makes this so attractive package



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The DK600 is an exciting new six voice polyphonic programmable MIDI synthesiser which we are giving away complete with software packages to link it to either a Commodore 64, BBC or Spectrum computer (whichever is appropriate for the winner)

2nd Prize ***Siel MK900 MIDI Music keyboard*** **– Value £600**
The MK900, which we reviewed in *PCW*, December 6, is Siel's Midi Home Computer music keyboard which we are giving away together with Midi interface and software to link it to a Commodore 64, BBC or Spectrum micro

3rd Prize ***Siel CMK 49 Commodore 64 music keyboard*** **– Value £225**
This is a new product from Siel offering a full-feature music add-on for your Commodore 64.

THE prizes will be awarded for the best original music compositions written using a home micro.

What we want you to do is to use your home computer to produce an original music recording. Entrants must submit:

* A tape or disc containing the software program or programs used to produce the composition
* An explanation in less than 1,500 words of the program, how it was written, what it does, and what you have tried to achieve
* Wherever possible we would like you to provide a printed listing of your music program and composition.
* We would also like you to send a cassette tape recording of your composition

COMPUTERS are increasingly being used in professional music making and it is possible to link all sorts of musical instruments to a home micro – drum machines, synths, and so on. The winning entries though will be likely to have been written and played using just an ordinary home micro. You may use any other equipment you wish – for example, a tape recorder to multi track the finished tape. Any commercially written home micro software packages may also be used, but their use will be taken into consideration.

We are looking more for quality of original composition, good ideas, and some programming skill. At the end of the day, though, it must be music to our ears! Different micros have different music facilities and that also will be taken into account. Don't be put off just because your Spectrum isn't very loud!

The competition will be judged by a panel of experts which includes:

Thomas Dolby
Vince Hill (Siel)
Mark Jenkins (*Melody Maker*)
Graham Taylor (*Popular Computing Weekly*)

The decision of the judges will be final

TO enter you must fill in the form and send it together with your tape(s), listings and/or discs containing your finished composition and explanatory notes, to Thomas Dolby's Micro Music Composition, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. At the same time you must also include four out of five special Micro Music vouchers, which will be printed in the next five issues of the magazine. **All entries must reach us by midday on March 14 and the winners will be announced in April.**

Please find enclosed my entry for Thomas Dolby's Micro Music Composition.

Name ....
Address..................

Micro used ....
Other hardware used ....

Any commercial software packages used..................

Reviews

Final score

Program *Match Day* **Price** £7.95 **Micro** Spectrum 48K **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS

Over now to Sunshine Towers for news of today's big match..."

Well, plucky Manchester side, Ocean, have now dragged the Spectrum up to the top of the table, just behind the Commodore, by producing a soccer game that puts blow football back in the dark ages where it belongs.

"Spectrum owners should be over the moon with this triumph as they watch the teams jog onto the turf, then marvel at the ball control of the smoothly moving players as they run, intercept, shoot for goal and are beaten lennil by a micro-chip, all seen in satisfying perspective from the grandstand.

"When it comes to the Cup, Ocean have all they need to pull it off, a built-in knock out contest, joystick and keyboard options, one or two player versions and changeable team names and colours.

"I was sick as a parrot when the referee, Mr A Bug, made me play a double length first half when I scored in the forty-fifth minute. Greater difference between team colours wouldn't go amiss either.

"But if you're an armchair sportsperson, this should keep you happy for hours."

John Minson

Reference

Program *Logo* **Micro** BBC/Electron **Price** £69.00 **Supplier** Acornsoft, 104 Hills Road, Cambridge

In the next few months there promises to be a number of versions of Logo available on the BBC B.

The first version is from Acornsoft and comes on two Roms. It is worth noting that the Acornsoft version will also run on the Electron.

As well as the two Roms you get a reference card, and a disc and cassette of extensions and examples. There are also three manuals: an introduction, a reference manual, and a guide to the extensions and examples.

Acornsoft Logo is able to run using the disc filing system, or the cassette filing system. The DFS has to be the Acorn version to be safe, because (like *Elite*) some of the disc commands expect perfectly defined behaviour.

Characters can be displayed on the graphics screen, and characters can be redefined, but there is no way in which a text-free screen can be produced. There has to be at least one line of text. This problem is somewhat ameliorated by a novel device to let you know in which drawing mode you happen to be (*Wrap*, *Fence*, or *Window*).

Depending on the mode, the border around the graphics screen alters so that you always know where you are. Acornsoft Logo also allows multiple turtles – similar to Tandy Color Logo.

It is possible to use *Local* variables, and the editing of procedures is well implemented.

The numerical aspects of this version of Logo are far better than most versions on other machines I have seen. The treatment of numbers is not confused in the way that it is on many older Logos and its accuracy is high.

The facilities for controlling recursive procedures (eg, *Throw*) are good and, although, the normal depth of recursion is not that great, tail recursion is treated as a special case, and produces no problems.

Though Acornsoft Logo has its numbers sorted out, it still has problems due to the prefix (plus infix) form of syntax. It does not have an *Equalp*/*Equal?* prefix primitive, for example.

The *Trace* facility, though, is the best I have seen on any Logo. So what was wrong with it?

The incompatability with non-Acorn DFS systems, though this is not due to any malevolence on Acorn's part, is definitely a drawback.

The turtle graphics seem very slow even with the turtle hidden (and 50% slower again with the turtle visible). To draw a circle by *FD1RT1* takes about 40 seconds (no turtle) or 60 seconds (turtle visible).

My conclusion is the Acornsoft Logo is a good version of the language and a very powerful system. At £69 it's a bit steep though.

Boris Allan

Conflict

Program *Return to Eden* **Micro** Amstrad CPC464 **Price** £9.95 **Supplier** Level 9 Computing, 229 Hughendon Road, High Wycombe, Bucks

Somehow the idea has got out that only the Spectrum and Commodore versions of this game have graphics but here they are on the 464 as well – and fast colourful and atmospheric they are too, having been designed for Level 9 by a professional artist. However, as anyone who has played one of Pete Austin's adventures will be well aware, it is the richness of the text and the quality of the imagination behind the plot that makes the game stand out. *Eden* is a fine addition to their range, exploiting, with great humour and inventiveness, the theme of the conflict between nature and the mechanical society, between intuition and cold logic, empathy and aggression. It is set on a world of the future newly colonised in man's quest for the stars, and there is actually more than one level to the plot, when most adventures have difficulty scraping together the flimsiest excuse for just one storyline. Never has the term 'interactive fiction' been more appropriate.

The game is a direct follow up to, but can be played without experience of, *Snowball* but I was relieved that it has gone back to the format of only (only !?!) 200+ locations rather than the brain-baffling 7000 of its predecessor.

With the arrival of this range, Amstrad owners already have the pick of the best text adventures.

Tony Kendle

A classic

Program *Manic Miner* **Micro** Amstrad CPC464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex

Yes, the one that started it all – the origin of the omnipresent jumping, dodging, treasure-collecting platform game has arrived on the 464. Not only that but it is an almost exact copy in every way imaginable. Software Projects, who have performed the conversion, have taken this approach on every machine it runs on and have managed a remarkable emulation of the Spectrum display in each case, with only some minor colour variations. Not everyone has regarded this as a good approach, claiming that it ignores the special abilities of their micros but I feel the display still looks refreshingly different and atmospheric on computers like the CBM 64 or the 464. Anyway, it all becomes irrelevant when you start playing, as you soon realise that not only was this the first, it is still in many ways the best, of platform games. Delightfully, but not excessively, manic in the variety of monsters and problems you face there is something about the game that clicks, even though it no longer has the awesome impact of its first release nor is as technically innovative as it once seemed.

For those who have upgraded from a Spectrum, it may not be worth buying again – for everyone else it is an essential classic.

Tony Kendle

White out

Program *Sky Ranger* **Price** £5.95 **Micro** Spectrum 48K **Supplier** Microsphere Computer Services Ltd, 72 Rosebery Road, London N10 2LA.

To be an Ace Skyranger, try flying a jetcopter among the skyscrapers, searching out robot Watchers, getting them centre screen and blasting them!

Microsphere have something of a reputation for producing novel games – witness *Skool Daze*. *Sky Ranger* is firmly within the 3D cockpit-view type of shoot 'em up, but very well done and with several new touches.

It takes a while to master flying a jetcopter. Take off, accelerate, now a right turn . No, misjudged it! Suddenly spinning round, down, but no loss of life – jetcopters are sturdy. The vidscreen has shattered, though, obscuring my view, making flying more difficult, and with only three more crashes before it's written off.

Gaining height helps but there's a further problem – a sea mist rolls in, forcing me down until it clears. Then night time arrives and I'm running short of fuel. I must land exactly on a refuelling station.

At last – there's a Watcher! I fire and the screen whites out. Now to the radar to find the next one. Your control panel is convincing and keeps you busy; the 3D graphics are so fast and smooth you'll be swaying in your chair.

If you want to blast things, being a Skyranger is a lot of fun.

John Minson

Suicidal

Program *Technician Ted* **Price** £5.95 **Micro** Spectrum 48K **Supplier** Hewson Consultants Ltd., Hewson House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX.

Technician Ted has a case for a hearing by an industrial tribunal. Not only does his boss not tell him what to do but he doesn't even know the layout of the factory and he's constantly racing against time and the threat of the sack.

Or to put it another way, *Technician Ted* is yet another alliterative, multi-screen, avoid the objects, find the route, discover what to do and do it before time runs out, arcade adventure!

Hewson are boasting about the smooth graphics and precise collision detection, and they certainly seem to have avoided the tendency to prejudge death that mars some games. However, there are certain situations here which put you into an endlessly suicidal loop, until all of your copious number of lives are spent.

That said, at least there's a fair amount of humour about *Technician Ted*, with the huge heads of canteen ladies floating about in the cafeteria, and the boss himself booting Ted out into the street every time the lives run out. It will also take some time to discover quite what to do where.

Not a great game then and it belongs to a type which is no longer fresh and exciting, but it is better than most.

John Minson

Frantic

Program The Hellion **Micro** Oric1/Atmos **Price** £5.95 **Supplier** Orpheus, The Smithy, Unit 1, Church Farm, Hatley St George, Sandy, Beds

Now this is the way to play shoot-em up. A frantic trip through a universe of video-game characters and paraphernalia.

Boring? Tedious? Impossible? Not a bit. With simultaneous control of movement and fire over the wasp like Hellion, you shoot and dodge everything.

Each attacking wave has a different pattern of flight. Some hop about (rabbits, carrots) some fly in swirling formation (tiny bugs), whilst others roll or flip-flop across the screen in small groups. Even an amateur, like myself, can make progress as the program permits you to start the next game a couple of levels below the last one reached.

Vic Fielder

Play by numbers

Play your favourite tunes on your CBM 64 with a machine code routine by ***Simon Wallace***

A major feature of the Commodore 64 is its high-quality, 3-voice, music synthesizer. If you have not been impressed by the music of computer games in the past, I suggest that you listen to the variations on the theme of *Greensleeves* which runs throughout Commodore's *Labyrinth* game. Another excellent composition is the title music for *Revenge of the Mutant Camels*. The User Manual (supplied with the CBM 64) demonstrates some simple tunes in Basic (see chapter 7). However, if you have ever tried to create a three-part tune you will have found that Basic is too slow for good results.

The answer is this general-purpose, machine-code routine that can play any variety of tunes for you. There is no need for you to understand the routine itself; all you need to do is code your music using three simple instructions.

The Basic program listed in this article will load the machine-code routine that will play any 1, 2, or 3 part tune that you create. The data for your tune is loaded using Data statements. The values of the various control registers are set according to the User Manual. (Refer to chapter 7 and appendix P, but note the printing errors for Voice 2 – Waveform should be 54283, and Sustain/Release should be 54285.)

You will have to set the Volume, Waveform, Attack, Decay, Sustain and Release. You could also set the *SYNC*, Ring Modulation, and Filter controls if you wish to be more ambitious! Finally, you set the address that your music code has been loaded in, and enter the machine code using the *SYS* command. The routine will play through your music until any key is pressed on the keyboard, or until the end of the tune. This makes the routine ideal for accompanying the traditional 'DO YOU WANT TO PLAY AGAIN (Y/N)?' message. Ideally, you should choose a piece of music to suit the occasion – maybe a tune connected with the theme of your game or something appropriate to the players success (or lack of it).

Only three instructions are used to code tunes. The first type is used to control the pitch of a note and uses two bytes. The first byte indicates which voice is to be used. The second byte controls the pitch of the note. Values of 0 to 94 may be used. These represent each semitone between C-1 and A#-7. Appendix M of the User Manual lists these values, but, if you do not have a copy, you can write out and number each semitone. (Do not use the table in the Programmer's Reference Guide as this is numbered in a different way.)

The second type of instruction is a time delay. Any value above 4 will create a proportionate delay. The actual timings have not been measured, but 200 units to the bar is usually suitable for March Time. Thus, a whole note (crotchet) would be 100, a half note (quaver) 50, and a quarter note (semiquaver) 25. To set a delay of more than 255, follow one delay with another. By the way, everything slows down if you depress *SHIFT-LOCK*. It can be easier than changing your timings! Finally, a zero byte will cause the routine to return control to the Basic program.

Example – 1,48,2,52,3,55,100,1,60,2,64,3,67,100,0

Plays voice 1 with note 48 (C-4), plays voice 2 with note 52 (E-4), plays voice 3 with note 55 (C-4), waits for 100 units, plays voice 1 with note 60 (C-5), plays voice 2 with note 64 (E-5), plays voice 3 with note 67 (G-5), waits for 100 units, then ends tune.

Program Notes

10-59 Load code modules using foolproof checksum to verify typing; mathematically calculate the internal high and low byte settings for the note table used by the machine code. This is to save you from having to type the values in. It also allows you to tune your CBM 64 to different keys by lowering the value 62567 in line 70. The value to use can be calculated using appendix M – decide which note is to be number 94, and calculate its Hi-Freq*256 + Low Freq.

499-599 Set address of tune to be played and set Attack/Decay (AD), Sustain/Release (SR), and Waveform (WA) for each of the three voices. Also set any other special features.

700-800 *POKEs* in control information for machine code. Low and high addresses are stored in bytes 251 and 252. AD is held in 49522 to 49524. SR is held in 49525 to 49527. WA is held in 49528 to 49530. The routine also sets volume in 54296. The machine code at 49152 is entered using SYS.

1000-1120 *DATA* for machine code. Note that 49152 to 49321 is code. Also, 49332 to 49530 must not be used for any other purpose as this is used as workspace.

1610-2280 *DATA* for tune. Note that the loader routine requires that each module of code starts with its name as text and ends with a checksum. The first time you enter a new tune, make the checksum 999. The loader routine will then report what it should be. Also note that it is often best to break tunes into separate modules. These can then be connected together by the Basic program allowing repeats and changes of tone-control settings. The example program, is coded as an intro, the main eight bars, the middle eight bars, and a coda. The Basic program calls the main part three times separated by the middle part.

9990-9999 The final *DATA* must read *DATA END,-1*

```
0 REM MACHINE CODE MUSIC VERSION 510-4
1 REM          BY SIMON WALLACE
2 REM
5 GOSUB 10   GOSUB 60   GOTO 99
8 REM
9 REM MACHINE CODE LOADER
10 K=0   READ MN$   READ I   J=I   IF J=-1 THEN RETURN
15 PRINT "■",MN$," STARTS AT",J
20 K=K+I+1   READ I
30 IF I<256 THEN POKE J,I   J=J+1   GOTO 20
35 PRINT MN$," ENDS AT    ",J-1
40 IF I=K THEN 10
50 PRINT "CHECKSUM ERROR IN ROUTINE ",MN$
52 PRINT "  ADDRESS   ",J-1
54 PRINT "  CALCULATED",K
56 PRINT "  SHOULD BE ",I
58 STOP
59 REM
60 REM NOTE-TABLE LOADER
61 REM
70 FOR N=0 TO 94   F=2↑((N-94)/12)*62567
80 FH=INT(F/256+.0001)   FL=INT(F-(256*FH)+.5)
85 POKE 49332+N,FL   POKE 49427+N,FH   NEXT N
90 RETURN
99 REM
499 REM
500 REM TUNE 4 - TAKE FIVE
510 ADD=50135
520 AD(1)=0   SR(1)=249   WA(1)=33
530 AD(2)=100   SR(2)=185   WA(2)=65
540 AD(3)=40   SR(3)=250   WA(3)=33
545 POKE54282,0
550 GOSUB700
551 ADD=50269   GOSUB 706
553 ADD=50560   GOSUB 706
555 ADD=50269   GOSUB 706
557 ADD=50560   GOSUB 706
558 ADD=50269   GOSUB 706
559 ADD=50858   GOSUB 706
580 FOR I=1 TO 3000 : NEXT I
599 REM
700 REM TUNE PLAYING ROUTINE
705 REM ADD IS ADDRESS OF TUNE
740 POKE 54296,15
750 FOR I=1 TO 3
760 POKE 49521+I,AD(I)
```

```
770 POKE 49524+I,AR(I)
780 POKE 49527+I,WA(I)
785 NEXT I
786 I=INT(ADD/256)
787 J=ADD-(I*256)
788 POKE 251,J  POKE 252,I
790 SYS 49152
795 REMPOKE 54296,0
800 RETURN
999 DATA  MACHINE CODE',49152
1000 DATA 169, 212, 133, 254, 162, 0, 161, 251, 206, 1, 96, 32, 161, 192
1010 DATA 170, 41, 252, 209, 72, 138, 202, 134, 2, 168, 0, 201, 2, 208
1020 DATA 2, 160, 7, 201, 3, 208, 2, 160, 14, 132, 253, 160, 4, 169
1030 DATA 0, 145, 253, 160, 0, 177, 251, 32, 161, 192, 170, 189, 188, 192
1040 DATA 145, 253, 189, 19, 193, 160, 1, 145, 253, 166, 2, 189, 114, 193
1050 DATA 160, 5, 145, 253, 189, 117, 193, 160, 6, 145, 253, 189, 120, 193
1060 DATA 160, 4, 145, 253, 76, 4, 192, 133, 164, 160, 162, 36, 32, 179
1070 DATA 192, 232, 208, 250, 132, 163, 32, 159, 255, 164, 163, 136, 208, 238
1080 DATA 162, 4, 160, 0, 32, 160, 192, 162, 11, 160, 1, 32, 160, 192
1090 DATA 162, 10, 160, 2, 32, 160, 192, 164, 164, 162, 146, 32, 179, 192
1100 DATA 232, 208, 250, 132, 163, 32, 159, 255, 164, 163, 136, 208, 238, 165
1110 DATA 198, 240, 1, 96  76, 0, 192, 230, 251, 208, 2, 230, 252, 96
1120 DATA 134, 253, 185, 120, 193, 41, 254  160, 0, 145  253, 96, 74750
1610 DATA "EXAMPLE   INTRO",50135
1620 DATA 255 1 31 30,1,46,2,50,3,55,60
1630 DATA 1,43,30,1 46,2,50,3,55,60
1640 DATA 1,36  50 60,1 26 2,48,3 5_,60
1650 DATA 1,31,30 1,46 2,50,3,55,60
1660 DATA 1,43 30 1,46,2,50 3,55 60
1670 DATA 1,38,3,50,60,1 26 2 48,3,53,60
1680 DATA 1,31,30,1 46 2,50 3,55,60
1690 DATA 1 43,30,1,46,2,50,3,55 60
1700 DATA 1 38,3 50,60,1,26,2,48,3,53,60
1710 DATA 1,31,30,1,46,2,50,3,55,60
1720 DATA 1,43,30,1,46,2 50,3 55,60
1730 DATA 1,36,3,50,45,3,55,15,1,26
1735 DATA 3,50,45 3,60,5,0,54251
1737 DATA   SECTION   (A)',50269
1740 DATA 1,31,3,61,45
1750 DATA 2,50,3,62 15,3,61,45,3,60,15
1760 DATA 1,50,2,55,3,58,60,1,38 3,50,60
1770 DATA 1,26,2,48,3,53,60,1,31,3,55,30
1780 DATA 1,46,2,50,60,1,43,30,1,46 2,50 60
1790 DATA 1,38,3,57 10,3 56 10,3,57,10,3,55,30
1800 DATA 1 26,2,48,3,53,60,1,31,3,55,50
1810 DATA 1,46,2,50,60 1,43,30 1,46,2,50,60
1820 DATA 1,38,3,53 10,3,55,10,3,53,10,3,50,30
1830 DATA 1,26 2,45 3 48,60 1,31,3,50,30
1840 DATA 1,43,2,46,60,1,43,30,1,43,2,46,60
1850 DATA 1,38,3,50,45,3,55 15,1,26
1860 DATA 3,50,45,3,60,15,1,31,3,61,45
1870 DATA 2,56,3,62,15,3,61 45,3,60 15
1880 DATA 1,50,2,55,3,58,60,1 38,3,50,60
1890 DATA 1,26,2,48,3,53,60,1,31,3,55,30
1900 DATA 1,46,2,50,60 1,43,30,1,46,2,50,60
1910 DATA 1,38,3,57 10,3 56,10,3,57,10,3,55,30
1920 DATA 1,26,2,48,3,53,60,1,31,3,55,30
1930 DATA 1,46,2,50,60,1,43,30,1,46,2,50,60
1940 DATA 1,38,3,53,10,3,55,10,3,53,10,3,50,30
1950 DATA 1,26,2,45,3 48 60,1,31,3,50 30
1960 DATA 1,43,2,46,60,1,43,30,1,43,2,46,60
1970 DATA 1,38,2,50,60,1,26,3,48,2,53 50
1975 DATA 0,58510,  SECTION  (B) ,50560
1980 DATA 1,27,3,48 2,55,30,2,50,60
1990 DATA 2,55,30 1 31,2,51,60,1,33 3,45,2,48,45,2,50,15
2000 DATA 1,31,3,48,2,51,45,2,52,15
2010 DATA 1,26,3,45,2,53,30,2,57,60
2020 DATA 2,53,30 1 29 2,50,60
2030 DATA 1,31,3,43,2,46,45,2,48,15
2040 DATA 1,29,3,46 2,49,45,2,50,15
2050 DATA 1,24,3,46,2,51,30,2,55 60
2060 DATA 2,51,30 1,27,2,48,60
2070 DATA 1,29,2,45,45,2,46,15,1,27,2,48,45
2080 DATA 2,49,15,1,22,3,45,2,50,45
2090 DATA 2 49,15,2,50,45,2,51,15,1,22
2100 DATA 2 53,60,1,26,3,50,2,53,45
2110 DATA 2,52,15,1,29,2,53,45,2,54,15
2120 DATA 1,27,3,48,2,55,30,2,50,60
2130 DATA 2,55,30,1,31,2,51,60,1,33,3,45,2,48,45,2,50,15
2140 DATA 1,31,3,48,2,51,45,2,52,15
2150 DATA 1 26,3,45,2,53,30 2,57,60
2160 DATA 2,53,30,1,29,2,50,60
2170 DATA 1,31,3,43,2,46,45,2,60,15
2180 DATA 1,29,3,46,2,49,45,2,50,15
2190 DATA 1,24,3,46,2,51,30,2,55,80
2200 DATA 2,51,30,1,27,2,48,60
2210 DATA 1,29,2,45,45,2,48 15,1,27
2220 DATA 3,43,2,53,45,2,51,15
2230 DATA 1,33,2,38,30,1 48,3,45,60
2240 DATA 3,55,30,1,52,3,57,60
2250 DATA1,26,2,66,3,50,45,3,55,15
2260 DATA1,30,3,50,45,3 60 5,0,58616
2270 DATA ' EXAMPLE  CODA",50958
2280 DATA 1,31,30,1,46,2,50,3,55,60
2290 DATA 1,43,30,1,46,2,50,3,55,60
2300 DATA 1,38,3,53 10,3,55,10,3,53,10
2310 DATA 3,50,30,1,26,2,45,3,48,60
2320 DATA 1,31,3,50,30,1,43 2,46,60
2330 DATA 1,43,30,1,43,2,46,60
2340 DATA 1,38,3,50,60 1,26,2,48,3,53,60
2350 DATA 1,31 30,1,46,2,50,3,55 60
2360 DATA 1,43,30,1,46,2,50,3,55,60
2370 DATA 1,30,3,53,10,3,55,10,3,53,10
2380 DATA 3,50,30,1,26 2,45,3,46,60
2390 DATA 1,31,3,50,30 1,43,2,46,60
2400 DATA 1,43,30,1,43,2,46,60
2410 DATA 1,38,3 50 60,1,26,2,48,3,53,60
2420 DATA 1,31,30,1,45,2,50,3,55,60
2430 DATA 1,43,30,1,46,2,50,3,55,60
2440 DATA 1,38,3,57,10,3,50,10,3,57,10
2450 DATA 3,55 30 1,26,2,48,3,53 60
2460 DATA 1,31,3 55,30,1,43 2,46,60
2470 DATA 1,43,30,1,43,2,46,60
2480 DATA 1,38,3,50,60,1,26,2,48,3,53,60
2490 DATA 1,31,30 1,46 2,50,3,55,60
2500 DATA 1,43,30,1,46,2,50,3,55,60
2510 DATA 1,38,3,50,60,1,26,2,48,3,53,60
2520 DATA 1,31,30,1,46,2,50,3,55,60
2530 DATA 1,43,30,1,46,2,50,3,55,60
2540 DATA 1,38,3,50,60,1,26 2,48,3,53,60
2550 DATA 1,31,2,46,3,55,120,0,59606
9998 DATA END,-1
9999 REM
```

A brief sketch

A short sketch-pad program for your artistic pleasure written by Andrew Pritchard

This is a little Sketch Pad program for the Sinclair QL. The program has very simple but effective full screen drawing facilities the results of which can be saved to microdrive to be used or modified later.

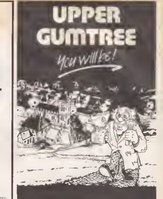
When run, the program gives a brief reminder of the special key functions and then asks for the name of the input screen file (if a screen is to be modified) and the name of the output screen file once it is complete. There are no checks on the file names, so be careful.

The program controls are as follows: the arrow keys move the cursor, shown as "+", which thanks to the *Over -1* command can go anywhere on the screen without interfering with the picture. *F1* switches the cursor to a paintbrush, that is, a trail of *Ink* is left after moving the cursor. *F2* sets up a marker which is the start of any line drawn. *F3* plots from the marker or end of the last line to current cursor position. *F4* sets the cursor back to the *F2* designated marker. *F5* fills in the figure marked out by the plot commands. Finally, *Enter* saves the screen to the file named at initialisation. The numbers 0 to 8 specify the ink colour.

The *Easel* package can be used from SuperBasic to print screen dumps. What you have to do is thus: reserve memory using the *Respr* function, reserving 4000 bytes, *Load* the *GPrint-Prt* file from the *Easel* cartridge into the reserved area using *Lbytes*, set up the screen to be dumped and then *Call* the routine using the address of the reserved memory area.

If your printer works with the *Easel Print* facility, then this method should work as well.

```
100 MODE 8:WINDOW 512,256,0,0:PAPER 0:INK 7:CLS #2
110 PRINT #2,"   Sketch Pad (c)1984 A.Pritchard"\\
120 PRINT #2,"Arrow keys control cursor"\"F1 = cursor or paintbrush"\"F2 = set a
marker"\"F3 = plot line to cursor"\"F4 = move cursor to marker"\"F5 = Fill in fig
ure"\"ENTER = save screen to named file"\"0 to 8 = colour control"
130 INPUT #2,\"Input screen file ? ";a$
140 INPUT #2,"Output screen file ? ";b$
150 IF a$=""THEN CLS:ELSE LBYTES a$,131072
160 DIM gx(50),gy(50)
170 p=7:x=50:y=50:c=1:type=-1:remember
180 OVER -1
190 REPeat in
200 CURSOR x,y,0,0:PRINT "+";:i$=INKEY$(-1)
210 CURSOR x,y,0,0
220 IF type =-1THEN PRINT "+";:ELSE PRINT " ";
230 ic=CODE(i$):IF ic=192THEN x=x-1:NEXT in
240 IF ic=200THEN x=x+1:NEXT in
250 IF ic=208THEN y=y+1:NEXT in
260 IF ic=216THEN y=y-1:NEXT in
270 IF ic=232THEN changetype
280 IF ic=236THEN BEEP 150,40:c=1:remember
290 IF ic=240THEN plot
300 IF ic=244THEN x=gx(1)-1.5:y=gy(1)+2
310 IF ic=248THEN fillin
320 IF ic=10 THEN SBYTES b$,131072,32768
330 IF ic<48 OR ic>56 THEN NEXT in
340 p=ic-48:IF ic=56 THEN p=226
350 PAPER p:OVER 0
360 CURSOR x,y,0,0
370 PRINT " ";:OVER type
390 END REPeat in
400 :
410 DEFine PROCedure fillin
420 OVER 0:INK p:FILL 1
430 FOR i=2TO c
440 LINE gx(i-1),gy(i-1) TO gx(i),gy(i)
450 END FOR i
460 FILL 0:INK 7:OVER type
470 END DEFine
480 :
490 DEFine PROCedure plot
500 OVER 0:INK p
510 c=c+1:IF c>DIMN(gx)THEN c=1:remember:RETurn
520 remember:LINE gx(c-1),gy(c-1) TO gx(c),gy(c)
530 INK 7:OVER type
540 END DEFine
550 :
560 DEFine PROCedure changetype
570 IF type=0THEN type=-1:ELSE type =0
575 OVER type
580 END DEFine
590 :
600 DEFine PROCedure remember
610 gx(c)=x+1.5:gy(c)=y-2
620 END DEFine
```


UPPER
GUMTREE
You will be!

The key to it all

Turn your BBC B into a polyphonic music machine with the help of ***Ian Waugh***

The introduction of sound chips into personal computers brought about the birth of a totally new musical instrument – the computer itself. How easy and effective it is to play depends both upon the hardware and the software used to drive it. The BBC micro excels in both departments and we can use it to perform some quite complex musical feats.

Most musical instruments are designed to be ergonomically easy to play – within the confines of the shape required by the instrument to produce whatever sound it is supposed to produce. A piano-type keyboard is probably one of the best examples, although designs exist for other keyboards which are intended to be easier to play.

Computers, unless they are specifically designed to operate as a musical instrument, are not normally supplied with a musical keyboard and if we want to play the computer we must make do with what we have, ie, the *Qwerty* typewriter keyboard.

Depending upon your musical upbringing, you may find this easy or difficult to adapt to. The *Qwerty* keys are not laid out like a piano keyboard and are not labelled to correspond to musical notes. It may well be that here the non-musician has a distinct advantage over the keyboard player.

If you can play a piano keyboard your playing will tend to be partly automatic and, after a little practice, your fingers know how to move in order to play a certain sequence of notes. Much the same applies to the typist who is used to the *Qwerty* keyboard, but in this case the fingers are responding to different patterns, ie, word patterns, not musical ones.

Musicians and non-musicians alike will find that a little practice greatly improves their skill in using the *Qwerty* keyboard as a musical instrument but it will still be difficult to play anything of any technical difficulty. We can, however, still have a lot of fun using the computer in this way.

The program shown listed here converts your BBC B keyboard into a 3-note polyphonic synthesiser, with controls as shown below. Function keys f1 to f4 will put the keyboard under the control of that envelope number.

Program Notes

There is more than one way in which this program could have been written. One way, the brute force method, would be to include 26 lines such as

380 If Keys Pressed>EndProcElse If Inkey (−17)
Note=33 PROCSound:KeysPressed=Keyspressed+1

At least such a method would be quite easy to understand. A more sophisticated method is also doubtless possible but at the expense of comprehension. This program tries to tread a middle path. Once you understand the principles involved you can experiment and write your own – as simple or as sophisticated as you wish. To minimise the time taken by the program to interpret the Basic code, integer variables and short variable names have been used.

The way the program works is described first, followed by individual sections and aspects.

We have substituted the 26 possible lines mentioned above by an array, *KBoard%*, which contains the negative *Inkey* values of the keys we want the program to respond to. A second array, *KFlag%*, keeps track of whether a key is currently pressed or not. The array, *CH%*, keeps track of which channel is being used to produce which note.

Pitch% sets the basic root pitch and *E%* is the envelope number.

The *Repeat* loop between Lines 370 and 410 cycles through the 26 negative *Inkey* values in the *KBoard%* array. The *KFlag%* array checks to see if there has been any change in keys pressed since the last loop and if there has the program is diverted to *Procp*.

N% refers to how far up the scale we are. If *N%* equals 23, 24, 25 or 26, one of the function keys is being pressed and the program is diverted to *Proce* which simply sets *E%* to a new envelope number. If *N%* is less than 23 it means a note is required.

As we can't sound more than three notes at once, the program checks, in Line 460, to see how many keys are currently pressed. If there are already three keys down and another key has been pressed, control is immediately passed back to the *Repeat* loop.

If control gets to Line 480, there is an empty channel and a key has been pressed telling the program to make a sound. *Chan%* is incremented by 1 until it finds an empty channel. This is given the value of *N%* which tells the program which key enabled that particular channel and it plays a sound at the required pitch. *KPressed%* is also incremented to keep track of how many keys are down. Lastly, the *KFlag%* variable is changed in Line 500. If *KFlag%(N%)* was TRUE, ie, pressed down, it is set to FALSE. The next time the loop looks at this value of N% in Line 390 it will be looking to see if the key has been lifted.

If a key has been lifted, control passes to Line 480 instead of 480. *Chan%* is incremented until the program finds which channel was responsible for the sound produced by the key which has just been lifted. When the channel has been found, it is flushed. Notice the use of the dummy note parameter to allow the release phase to occur. *KPressed%* is decremented to show that a sound channel has been freed. *KFlag%(N%)* is changed again by Line 500 to TRUE.

The use of *KFlag%* ensures that a channel is not given a sound request until the key responsible for the present sound on that channel is lifted. This prevents a stream of continuous information going to the sound channels as in the monophonic program, and it permits envelope control.

	2	3		5	6		8	9	0		^	\
Q	W	E	R	T	Y	U	I	O	P	@	[	_

```
10 REM PROGRAM 8.3
20 REM 3-Note Polyphonic
30 REM Keyboard (Q - _)
40 REM From G (Pitch=81)
50 REM To   E (Pitch=165)
60
70 DIM KBoard%(26)
80 DIM KFlag%(26)
90 DIM CH%(3)
100
110 FOR Channel=1 TO 3
120 CH%(Channel)=0
130 NEXT Channel
140
150 FOR Keys=1 TO 26
160 READ Data
170 KBoard%(Keys)=Data
180 KFlag%(Keys)=-1
190 NEXT Keys
200
210 DATA 17,50,34,18,35,52,20,36,53
220 DATA 69,54,22,38,39,55,40,56,72
230 DATA 25,57,121,41,114,115,116,21
240
250 REM f1=ENVELOPE1:f2=ENVELOPE2
260 REM f3=ENVELOPE3:f4=ENVELOPE4
270
280 ENVELOPE1,1,0,0,0,0,0,0,126,-4,-4,
-4,126,100
```

```
  290 ENVELOPE2,129,12,0,-4,1,0,3,126,-1
,0,-4,126,100
  300 ENVELOPE3,1,0,1,-1,0,1,1,126,-1,0,
-4,126,100
  310 ENVELOPE4,0,0,0,0,0,0,0,63,10,0,-6
3,63,126
  320
  330 Pitch%=77
  340 E%=2
  350
  360 KPressed%=0
  370 REPEAT
  380 FOR N%=1 TO 26
  390 IF INKEY(-(KBoard%(N%)))=KFlag%(N%
) PROCP
  400 NEXT N%
  410 UNTIL FALSE
  420 END
  430
  440 DEF PROCP
  450 IF N%>22 PROCE:ENDPROC
  460 IF KPressed%=3 AND KFlag%(N%) ENDP
ROC
  470 Chan%=0
  480 IF KFlag%(N%) REPEAT Chan%=Chan%+1
:UNTIL CH%(Chan%)=0:CH%(Chan%)=N%:SOUND&
10+Chan%,E%,Pitch%+N%*4,255:KPressed%=KP
ressed%+1
  490 IF NOT KFlag%(N%) REPEAT Chan%=Cha
n%+1:UNTIL CH%(Chan%)=N%:CH%(Chan%)=0:SO
UND&10+Chan%,0,0,0:KPressed%=KPressed%
-1
  500 KFlag%(N%)=NOT KFlag%(N%)
  510 ENDPROC
  520
  530 DEF PROCE
  540 E%=N%-22
  550 ENDPROC
```

The sound command in Line 480 which produces the sound has been given an infinite duration. If the AS phase of the envelope is 0, the note will continue until you take your finger off the key. The channel will then be flushed the next time around the loop by Line 490.

The use of *KPressed%* in Line 460 to terminate the procedure if too many keys are down can be altered. As it is, if three keys are down and you press another, control just passes back to the *Repeat* loop. Some synthesisers have a high, a low or a last note priority which means that the three highest, lowest or the three last notes take precedence over any others. You can achieve this by altering the '3 keys down' criteria in this line.

If you want to try some dazzling fingerwork, you may find the response a little slow; and you may notice a very small time lag between the notes of a chord if you press three keys exactly together. You will see that the program does not attempt to synchronize any notes. This is a result of the program design and the fact that each note has to run through a lot of Basic programming before it is heard. This is not likely to be a problem but you can cut the response time by compressing the coding.

As a modification, if you wanted to synchronize the notes, instead of calling *Procp* with every note pressed you could call a *Procgetnotes* to count the keys pressed, and work out the pitch values. At the end of the *For ... Next* loop you could call a *ProcPlay* which would carry out the information gathered by *Procgetnotes* and synchronize the notes if necessary.

You can add more commands via the negative *Inkey* function. These can be used to increase the range of the key board and to access more envelopes. Detection of, say, the *Shift* key could increase the pitch by an octave. Include the relevant key numbers (User Guide page 275) in the *Data* statements following Line 230. The arrays, initiating loops and the repeating *For ... Next* loop will need to be altered too.

This is an edited extract from Ian Waugh's book *Making music on the BBC computer* published by Sunshine Books at £5.95.





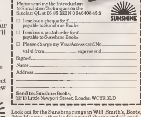
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Moving staircase

Gordon McQueen explains how to produce a flicker free graphic display on the Dragon 32

One of the most useful features of the Dragons graphics capabilities is the ability to draw on one graphics screen while displaying another. This feature allows flicker free graphics displays, however it uses up twice the normal number of graphics pages for each *Pmode* eg, to animate a *Pmode* 0 display two graphic pages are required, eight pages are required for a *Pmode* 4 display. Listed here are two programs which make use of this feature.

Program One draws two large spheres with a row of smaller spheres to one side of them on the first set of four graphics pages and the same display on the second set of four graphics pages with the colours in different positions. When the program is run the effect is quite impressive as the large spheres appear to rotate and the small spheres appear at the top of the screen.

This effect is obtained by displaying one graphics display followed by the other using the *Pmode* command and the *Screen* command. When the *Pmode* command is used it requires two parameters which are the graphics mode and the starting page of the graphics screen. If the starting page is changed in a program line then no effect can be seen until the Screen command is used. This routine is between Lines 430 and 480.

Program two draws a well known optical illusion, a staircase that constantly goes down or up depending upon which way you follow it. The animation in this program is a ball which bounces down the staircase, the *Get* and *Put* commands are used along with the *Or* option to draw the ball.

The arrays used are *Ball* to store the drawing of the ball, *S1* and *S2* are used to store parts of the staircase that are overwritten by the ball.

The drawing of the staircase is repeated twice, once for each screen instead of using the *Pcopy* command as for some strange reason if you *Pcopy* 4 to 8, your program sometimes crashes and returns you to command level.

The screen changing in this program to produce the animation is accomplished between Lines 970 and 1040. The direction of the ball is controlled in Lines 1050 and 1060 and the bouncing effect is produced in Line 1090 by adding a sine wave of amplitude 10 pixels to the *Y* coordinate of the balls position.

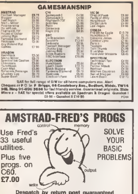
This routine will enable Dragon users to produce flicker free graphics even on a large scale as in Program 1. (Note however due to a *Rom* bug the first time you run either program you may get a *Sn* error due to the *Pclear* statement.)

Listing 1

```
10 PCLEAR 5
20 PMODE3 1
30 C1=3 C2=2
40 PCLS0
50 SCREEN1,0
60 CIRCLE(110 10) 2,1
70 CIRCLE(145 34) 6,1
80 PAINT(145 34) 1 1
90 CIRCLE(175,70) 11,1
100 PAINT 175 70) 1 1
110 CIRCLE(150 120) 20 1
120 PAINT(150 120) 1 1
130 CIRCLE(150 190) 35,1
140 PAINT(150 190) 1 1
150 GOSUB 170
160 GOTO 280
170 CIRCLE(50 42) 42 1
180 CIRCLE(50 42) 27 1,1 7
190 CIRCLE(70 140) 50 1
200 CIRCLE(70 140) 30 1 1 7
210 PAINT(70 140) C2 1
220 PAINT(50 42),C2 1
230 PAINT(20 42) C1 1
240 PAINT(90 140),C1 1
250 PAINT(80 42) C1 1
260 PAINT(110 140) C1 1
270 RETURN
280 PMODE3,5
290 PCLS0
300 SCREEN1,0
310 C=C1 C1=C2 C2=C
320 CIRCLE(100,1),1,1
330 CIRCLE(130 20) 4,1
340 PAINT(130 20) 1,1
350 CIRCLE 160 45) 8,1
360 PAINT(160,45),1,1
370 CIRCLE(185,100),15,1
380 PAINT(185 100),1,1
390 CIRCLE(170,160) 25 1
400 PAINT(170,160),1,1
410 GOSUB 170
420 PM=1
430 PMODE3,PM
440 SCREEN1 0
450 FORT=1TO30 NEXTT
460 PM=PM+4
470 IF PM=9 THEN PM=1
480 GOTO 430
```

Listing 2

```
80 CLS
90 PRINT"          PUSH TO QUIT
100 PCLEAR8
110 COLOR5 0
120 GR=4
130 DIM BALL 10 10) S2(10 10) S1 10 10)
140 PM=1
150 PMODEGR 1
160 PCLS
170 CIRCLE(5 5) 5
180 PAINT(5 5) 5 5
190 GET(0,0)-(10 10) BALL G
200 PMODEGR PM
210 PCLS
220 IF PM=5 THEN SCREEN1 1
230 LINE(150 65)-(150 130) PSET
240 X=230
250 Y=96
260 FOR A=0 TO 3
270 LINE(X Y)-(X-20,Y-12) PSET
280 X=X-20
290 IF A=3 THEN Y=Y-12 GOTO320
300 Y=Y-16
310 LINE-(X Y),PSET
320 NEXT
330 FOR A=1 TO 7
340 LINE(X Y)-(X-16 Y+10) PSET
350 DRAW BM"+STR$(X-20)+","+STR$(Y+12)
360 X=X-20
370 IF A=7 THEN Y=Y+12 GOTO 390
380 Y=Y+8
390 NEXT A
400 FOR A=1 TO 7
410 LINE(X Y)-(X+20,Y+12),PSET
420 X=X+20
430 IF A=7 THEN Y=Y+12 GOTO460
440 Y=Y+8
450 LINE-(X Y) PSET
460 NEXT
470 FOR A=0 TO 3
480 LINE(X Y)-(X+20 Y-12) PSET
490 X=Y+20
500 IF A=3 THEN Y=Y+12:GOTO 530
510 Y=Y-16
520 LINE-(X,Y) PSET
530 NEXT
540 X=10
550 Y=100
560 FOR A=1 TO 3
570 LINE(X Y)-(X-20 Y-12) PSET
580 X=X-20
590 IF A=3 THEN Y=Y-12 GOTO620
600 Y=Y-16
610 LINE-(X,Y) PSET
620 LINE (X+20 Y-12) PSET
630 IF A<>3 THEN LINE(X+20 Y-8)-(X
Y+4) PSET
640 NEXT
650 Y=Y-4
660 FOR A=2 TO 7
670 LINE X Y-4)-(X-20 Y-16) PSET
680 LINE(X,Y)-(X+20 Y-12),PSET
690 LINE(X Y)-(X Y-4) PSET
700 X=X-20 Y=Y+8
710 NEXT
720 FOR A=3 TO 7
730 LINE(X+20 Y-16)-(X Y-4),PSET
740 LINE(X+20 Y-16)-(X+36 Y-6) PSET
750 DRAW BM"+STR$(X+40)+","+STR$(Y-4)
760 X=X+20 Y=Y+8
770 NEXT
780 FOR A=1 TO 3
790 LINE(X+20 Y-16)-(X Y-4) PSET
800 LINE(X+20 Y-16)-(X+40 Y-4),PSET
810 LINE(X+20 Y-20)-(X+40,Y-8),PSET
820 IF A<>3 THENLINE(X+20 Y-20)-(X+20
Y-16),PSET
830 X=X+20 Y=Y-16
840 PAINT(X+1 Y) 5 5
850 NEXT
860 LINE(230 96)-(230 191) PSET
870 LINE(150 150)-(150 191),PSET
880 LINE(10,96)-(10 191) PSET
890 LINE(150 65)-(150 130) PSET
900 PAINT(20 100) 5 5
910 PAINT(160,90),5 5
920 LINE(48 95)-(55 100) PRESET,BF
930 PSET(55 95)
940 PM=PM+4 IF PM=9 THEN PM=5:GOTO 950
ELSE GOTO 200
950 P=205 Q=60
960 GOTO 1050
970 IF PM=1 THEN GET(X Y)-(X+10 Y+10)
S2 G ELSE GET(X,Y)-
(X+10 Y+10),S1,G
980 PUT(X,Y)-(X+10,Y+10),BALL,OR
990 SCREEN1 1
1000 PM=PM+4 IF PM=9 THEN PM=1
1010 PMODEGR,PM
1020 IF PM=5 THEN PUT (X1,Y1)-(X1+10
Y1+10) S1 PSET
1030 IF PM=1 THEN PUT(X2 Y2)-(X2+10
Y2+10) S2 PSET
1040 RETURN
1050 IF P/145 THEN Q=Q-.4 ELSE Q=Q+.4
1060 IF Q<87 THEN P=P+1.1 ELSE P=P-1.1
1070 X=P Y=Q
1080 Z=Z+.05
1090 Y=Y-10+10*SIN(120Z)
1100 IF PM=5 THEN X1=X Y1=Y
1110 IF PM=1 THEN X2=X Y2=Y
1120 REM
1130 GOSUB 970
1140 GOTO 1050
RETURN
```





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D DAY	7 95	5 95
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MY CHESS II	11 95	9 25
BATTLE FOR MIDWAY	9 95	4 95
HAVOC	9 95	7 50
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STORM WARRIOR	5 95	4 50
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STAFF OF KARNATH	9 95	7 25
BLUE MAX	9 95	7 50
TAPPER	9 95	7.50
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BOULDER DASH	8 95	7 25
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Open Forum

We are always actively seeking programs for publication – either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates according to the length and nature of the program and the quality of the accompanying documentation.

Up Scroll

on Amstrad

Up-scroll is not a true screen scroller but achieves the effect by drawing lines from bottom to top using 15 of the inks available in *mode 0*. These ink colour values are incremented by two to give an effect of upward movement similar to that available on the BBC micro. *Side-scroll* is essentially the same as the previous but with the obvious exception that the lines are drawn vertically.

Windmill is based on a moire pattern with colour being added to give a fan effect similar to those above. Putting in different values for the increment gives strange results, a random value giving the effect of the windmill going clockwise and anti-clockwise.

```
U P - S C R O L L
10 REM ** By Simon Proctor **
20 MODE 0
30 c=1
40 FOR y=400 TO 0 STEP -8
50 MOVE 0,y
60 DRAW 640,y,c
70 c=c+1:IF c>15 THEN c=1
80 NEXT y
90 FOR a=1 TO 15
100 INK a,b
110 b=b+2:IF n>26 THEN b=0
120 NEXT a
130 GOTO 90
S I D E - S C R O L L
10 REM ** By Simon Proctor **
20 MODE 0
30 c=1
40 FOR x=0 TO 640 STEP 8
50 MOVE x,0
60 DRAW x,400,c
70 c=c+1:IF c>15 THEN c=1
80 NEXT x
90 FOR a=1 TO 15
100 INK a,b
110 b=b+2:IF b>26 THEN b=0
120 NEXT a
130 GOTO 90
W I N D M I L L
10 REM ** By Simon Proctor **
20 MODE 0
30 BORDER 0
40 c=1
50 FOR x=0 TO 640 STEP 8
60 MOVE x,0
70 DRAW 640-x,400,c
80 c=c+1:IF c>15 THEN c=1
90 NEXT x
100 FOR y=400 TO 0 STEP -5.5
110 MOVE 0,y
120 DRAW 640,400-y,c
130 c=c+1:IF c>15 THEN c=1
140 NEXT y
150 b=0
160 FOR a=1 TO 15
170 INK a,b
180 b=b+2:IF b>26 THEN b=0
190 NEXT a
200 GOTO 160
```

Arcade Avenue

On the map

The hot news this week is that the first people have written in having solved *Underwurlde* (I'm sure that you saw in the letters page a short while ago that we have also had the first to solve *Knight Lore* proving what hyper-advanced beings read *PCW*). The prize for *Underwurlde*, which I find so hard as to be absolutely infuriating, goes to Des Claypole of Peterborough, an old correspondent in this column, who finished with approximately 40,000 points and 36% (apparently there is no high score table or record of the number of points scored once the game is over) at 7.30 pm back on the 10th of November when, as he rightly points out, most people hadn't even seen a copy.

On completion Des claims that you are asked to look out for a forthcoming program called *Pentagram* which nobody I know has heard of – could it be a pre-production name for *Knight Lore*? (How exactly did you get your copy so quickly, Des, have you got friends in high places?) As for the forthcoming Ultimate space game, it is actually called *Alien 8*, Des, so it shouldn't clash with the Argus Press game of the film *Alien*.

Here are some tips from the expert's mouth: "Although I finished it quickly, the game is certainly not easy; in fact it is much harder than *Sabre Wulf*, and it took me four to five hours a day for a week and it is vital to make a map. My map of the 400-500 locations took up 40 sheets of squared paper. Unlike *Sabre Wulf*, some of the squares on the grid remain unused and are empty.

"You need different weapons to get past various obstacles. There are four weapons, but you can only carry three at one time. The weapons are scattered about the game in a similar way to the amulet of *Sabre Wulf*; however, they are found in fewer places so once one is found the others can be more easily located."

Coming close second to Des is Nick Fisk of Bridgend who wrote on the 15th November after two weeks of play having scored only 32%. Unlike Des, Nick says the message at the end refers to *Knight Lore* (very mysterious) and advises anyone who hasn't seen the game to "go out and buy it" even though he admits it is "maddeningly frustrating".

Here are Nick's tips: "When you are on the ground walk, don't jump, from one screen to another. To avoid the stalactites when you are on a rope, use the left and right keys to swing. Do not ignore what it says on the box. Make a map as if you get lost you will be very lucky to get back. You need the following weapons to kill these guardians: the stamping guardian needs the crossbow, the beetle needs the sword and finally the devil needs the fire."

Thanks very much, the pair of you, for those tips – please write again. Nick finishes off by passing on the way to get mega-scores on Daley's Decathlon but I'll be looking at that in a week or so – order your copy now.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

3D Cubes

on Spectrum

This is a very short and simple program, but it draws extremely good graphics, and in a pretty pattern too!

Program Notes

5-70 Title and sound

75-80 Colour

100-200 Drawing routine

```
5 BEEP .01,002 BEEP .1,01. B
EEP .5,00001 BEEP .0001,5
10 PRINT AT 5,5,"3-D CUBES";AT
 7,7 "BY",AT 9,9,"G PEART S SOFT
WARE",AT 15,5,"PRESS ENTER PLEAS
E"
11 PAUSE 5000
12 CLS
26 BEEP .0009,01
34 BEEP .0009,01
41 BEEP ,0009,01
45 BEEP .0009,01
52 BEEP ,0009,01
57 BEEP .0009,01
64 BEEP .0009,01
67 BEEP ,0009,01
70 BEEP .01,INT (RND+001)
75 BORDER 0. PAPER 0  INK 7
80 CLS
100 PLOT 8,0
110 DRAW 20,-5  DRAW 20,5  DRAW
20,-5  DRAW 20,5  DRAW 20,-5  D
RAW 20,5
120 DRAW 0,20
130 DRAW -20,-5. DRAW -20,5  DR
AW -20,-5. DRAW -20,5. DRAW -20,
-5  DRAW -20,5
140 PLOT 8,0  DRAW 0,20. PLOT 2
8,3  DRAW 0,20  PLOT 45,0  DRAW
0,20  PLOT 69,3. DRAW 0,20  PLOT
88,5  DRAW 0,20  PLOT 105,3  DR
AW 0,20  PLOT 120,0  DRAW 0,20
150 PLOT 8,20  DRAW 20,5  DRAW
20,-5  DRAW 20,5  DRAW 20,-5  DR
AW 20,5. DRAW 20,-5
160 PLOT 28,38  DRAW 20,-5  DRA
W 20,5. DRAW 20,-5  DRAW 20,5  D
RAW 0,20  DRAW -20,-5  DRAW -20,
5. DRAW -20,-5: DRAW -20,5
170 PLOT 28,38. DRAW 0,20  PLOT
48,30  DRAW 0,20  PLOT 68,35  D
RAW 0,20. PLOT 88,30  DRAW 0,20
180 PLOT 28,65. DRAW 20,5. DRAW
20,-5. DRAW 20,5  DRAW 20,-5
190 PLOT 48,50: DRAW 20,-5  DRA
W 20,5  DRAW 0,20  DRAW -20,-5
DRAW -20,5  DRAW 20,5  DRAW 20,-
5  PLOT 48,60. DRAW 0,20  PLOT 6
8,60  DRAW 0,20
200 BEEP .5,.5
```

Baud Walk

Cut the cost

Although networking outside the UK is fun, a lot of people will tell you that it can work out somewhat expensive. This article may help you to cut the cost.

Most networkers will already know about British Telecom's Packet Switch Data service, PSS, but, as many a networker will lament, the Databases overseas charge a lot for their services in fact, when you begin to go "worldwide" via PSS, it becomes plain that Prestel's free cheap rate access is far from the norm.

Databases, such as the Source and CompuServe, charge upwards of $5 per hour for 300 baud access, with even higher rates for faster speeds. It's a whole different ballgame when peak rate time in the US commences, as both these systems will quite happily devastate your credit card (essential for People Link sign-up) to the tune of $100 for three hours.

This effectively restricts you to after 11 pm and weekends for network sojourns to the States (we are five hours in front of the Eastern Seaboard), unless your wallet (and credit card) are made of stern stuff!

All this changes, however, with the imminent launch of a new US Network called American People Link. People Link aims to provide users with an affordable alternative to the Source and CompuServe with founder member hourly rates of $2.95 regardless of time and speed restrictions. If you sign up before the end of March 1985, you are guaranteed this rate, irrespective of future rate rises, which would appear likely given the competition available.

Signup costs a low $14.95 (compared with double or even treble for the other US systems), and is fully refundable if you subsequently resign on grounds of dissatisfaction.

People Link, based in Illinois, claim that their database will offer the best of both the major US networks. Such services include: Citizens Band simulation – a kind of electronic realtime chat facility. Full Electronic Mail service, with hardcopy delivery for non-members in the continental US. Bulletin Boards on most conceivable subjects (with user creation of new ones). Full on-line games facilities (including multi-user adventures such as the famous MUD, as found on Essex University and Compunet systems).

In short it promises to be an astounding bargain when compared with the present competition, but, as the service does not start until late December, it remains a product of the media and brochures.

The verdict? Well worth a look if you use, or are considering, a US service account.

If you have the temerity (and phone bill to boot) to dial direct to their Chicago dialup node, as opposed to accessing via PSS, there are no connect fees to pay, except, of course, for the international phone call.

More information from American People Link 3215, North Frontage, Suite 1505, Arlington Heights, Illinois 60004 Telephone 0101 312 870 4260 US Telex 703805. Users with access to Prestel may care to mailbox 01 999 5900 for more details.

Robin Wilkinson

Baud Walk is a new weekly column with news on networking databases, reviews of modems and software and points of contact for information.

Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson, Baud Walk *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 3LD. He can also be contacted on Prestel mailbox 016083727

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Tony Bridge's Adventure Corner

1984 (Contd)

This week I continue with the round-up of my favourite adventures of 1984.

***Tower of Despair* (Games Workshop)**
Another Quill'd adventure, and here as a representative of several programs that arrived at The Corner throughout the year, catching the attention with their striking packaging.

The first of these was probably *Nosferatu*, from Odyssey, which sadly failed to make an impact despite the box full of scraps of paper, cinema tickets, torn pages from a diary and other clues, and the little coffin-like bed for the cassette. *The Donut of Dunsalt* (Anubis) was another package, well – designed and well-produced on a low budget. Both of these deserve to be picked up by a larger software house and marketed properly.

Tower of Despair comes with an illustrated booklet with clues in the pictures which complement the program. In the very first locations, for example, a couple of objects must be picked up and their whereabouts is only apparent from the picture.

***Tir Na Nog* (Gargoyle)**
I'm not a great fan of purely graphic adventures. Not because I think text-only is the only way to play, as the purists do, but because it is usually painfully obvious that the memory required to draw the pictures has been taken at the expense of location descriptions and puzzles. To hark back to Infocom, their old cliché: "The player is free to let the imagination paint the scene".

Like all cliché's of course, the basic truth behind the well-worn phrase is obvious. *Tir Na Nog*, however, *is* a good graphic adventure and one that I quite often load up if only to see if I can figure what on earth is going on!

***Lords of Midnight* and *Doomdark's Revenge* (both Beyond)**
Has to be mentioned — although the beautiful graphics have naturally put a constraint on the depth of the adventure strategy, the programs really draw the player into the atmosphere of the epic struggle between good and evil. Exactly what wargamers have been waiting years for.

***Curse of the 7 Faces* (Omicron/Artic)**
Another of those adventures that turned up on the Grand Elf's desk with a covering letter which said "What do you think, will I be able to sell this?" Definitely, I said and I am glad to see that Artic have taken the game. Maybe now, more players will be able to experience the rich fantasy and well-designed text (with a Beeb-like script and colours of this program for the Spectrum).

***The Ultimate Series* (Sierra On-Line)**
One of my favourite types of adventures is the 'experience-gaining' game in which the player has to battle a way through a land populated with ever-stronger creatures, amassing gold and experience points along the way, the better to deal with monsters.

The Ultimate Series from the American company Sierra leaves a little to be desired as far as graphics are concerned, but otherwise is excellent. Players have to kit out their characters in the town's various shops before venturing forth into the countryside, where the battles are in painful real time. Documentation is extensive and well-written. Home grown programs are but a pale shadow, but include *The Ring* series (for the Dragon) from Wintersoft, *The Valley* from ASP and *Barrow Quest* from CCS.

***Games Without Frontiers* (8th Day)**
Six excellent, very cheap Quill'd adventures that certainly don't suffer for their budget price. A few spelling mistakes (spelling *hasn't* improved in 1984!) and no flash packaging, but the scenarios cover many facets of adventure-gaming and all six are fun to play. There's something for every grade of adventurer here.

***The Quill* and *The Illustrator* (both Gilsoft)**
You may notice that many of my favourites are written with *The Quill*, Gilsoft's well-known adventure-creating utility. In my opinion, this must rate as one of the most important programs of 1984.

It has allowed creativity to run free and The Grand Elf's mailbag bulges with dozens of Quill'd adventures.

Some may only be of average interest, but all have been written with loving care. One or two are brilliant. I've only mentioned a few here, but believe me, there are many more that bring a whistle of admiration.

Gilsoft has now licensed *The Quill* to Codewriter Inc. who have released versions for the Apple, Atari and C64 machines, so I expect 1985 to be a real *Quill* year.

Also, *The Illustrator* – Gilsoft's follow-up – has just been released. This, used in conjunction with *The Quill*, allows an author to incorporate pictures into a program.

One of the give aways that an adventure has been Quill'd are the system messages, such as "Bye now" which until now have been dictated by Gilsoft. Version C of *The Quill* which has also been released allows the author to edit these messages.

There have been many other adventures that I've enjoyed over the past year but there just isn't any more room here for me to cover any others.

If 1985 produces half as many terrific adventures as 1984, then I'll be a very happy person.

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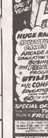
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This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So if you have an Adventure you want reviewed or if you are stuck in an Adventure you cannot progress any further write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.


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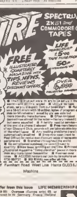



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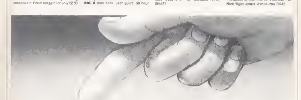
PORTABLE TV B/W 5 months old £225 ono Mortgage Tel 01 988 4811 ext 3736 or 01 771 1448 after 8pm

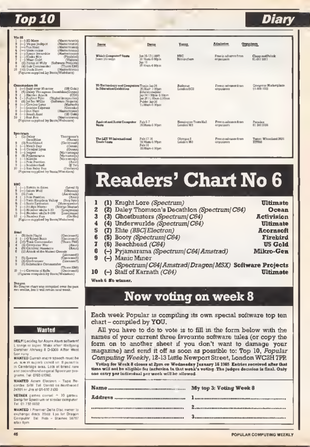
TI99 4/A Extras cassette player speech joysticks cartridge & cassette S/W Original Manuals listings magazines etc Worth £600 sell for £350 ono may split Tel Harley (02934) 73705 after 7pm

MATTEL INTELLIVISION & 6 cartridges £90 ono Tel Plus king 01 580 4741 ext 195 during office hours or Tel Ashford (Kent) 20228 after 7.30pm

THE ULTIMATE SPECTRUM add-on incorporates sound and speech synthesisers ECP amplifier and joystick interface complete with joystick £60 ono or swap for Interface 1 with microdrive Tel 01 574 4908

EPSOM TX80 120 CPS printer that produces simple but good quality print, interfaces to most micros £120 ono Tel Nick Rigby Jones Ashbourne 70645





Vic 20

1 (—) 3D Maze (Mastertronic)
2 (—) Vegas Jackpot (Mastertronic)
3 (—) Bun Hunt (Mastertronic)
4 (—) Untie mine (Mastertronic)
5 (—) Space Scramble (Mastertronic)
6 (—) Snake Bite (Firebird)
7 (—) Miner Gold (Visions)
8 (3) Perils of Willy (Software Projects)
9 (4) Sub Commander (Thorn EMI)
10 (10) Duck Shoot (Mastertronic)
(Figures supplied by Boots/Websters)

Commodore 64

1 (—) Raid over Moscow (US Gold)
2 (4) Daley Thompson Decathlon (Ocean)
3 (—) Harrier Attack (CDS)
4 (—) Fighter Pilot (Digital Integration)
5 (8) Jet Set Willie (Software Projects)
6 (—) Combat Lynx (Martech)
7 (—) Suicide Express (Gremlin)
8 (—) Bun Hunt (Mastertronic)
9 (—) Beach Head (US Gold)
10 (—) Star Ace (Mastertronic)
(Figures supplied by Boots/Websters)

Spectrum

1 (1) Daley Thompson's Decathlon (Ocean)
2 (3) Beachhead (Centresoft)
3 (—) Match Day (Ocean)
4 (—) Combat Lynx (Ocean)
5 (—) Jasper (Micromega)
6 (8) Pyjamarama (Micromega)
7 (—) Kentilla (Micromega)
8 (—) Pole Position (Atari)
9 (—) Boulderdash (K Tel)
10 (—) Run Baby Run (Firebird)
(Figures supplied by Boots/Websters)

BBC

1 (—) Return to Eden (Level 9)
2 (—) Sabre Wulf (Ultimate)
3 (3) Frak (Aardvark)
4 (—) Pole Position (Atari)
5 (—) Twin Kingdom Valley (Bug Byte)
6 (—) Basic Extension (Micropower)
7 (—) Bridge Master (Bridge Master)
8 (—) Number skills 0-10 (Longmans)
9 (—) Number skills 0-100 (Longmans)
10 (—) Number Fun (Griffin)
(Figures supplied by Boots/Websters)

Atari

1 (5) Solo Flight (Centresoft)
2 (—) O'Rileys Mine (Centresoft)
3 (10) Tank Commander (Thorn EMI)
4 (3) Computer War (Atari)
4 (6) Carnival Massacre (Atari)
6 (1) Attack of the Mutant Camels (Llamasoft)
7 (5) Zaxxon (Centresoft)
8 (4) Gridrunner (Llamasoft)
9 (6) Submarine Commander (Thorn EMI)
10 (—) Caverns of Kafka (Centresoft)
(Figures compiled by Boots/Websters)

Dragon

No Dragon chart was compiled over the past two weeks, but it will return next week.

Wanted

HELP! Looking for Acorn Atom software! Listings or tapes. Make offer! Wolfgang Gerstner Ahrweg 8 D-5305 Alfter West Germany

WANTED Currah micro speech must be as new in superb condition. If possible in Cambridge area. Lots of brand new and secondhand original Spectrum programs. Tel 0763 61382.

WANTED Acorn Electron – Tape Recorder S/W Tel Daniel on Northwood 24995 or Jim at 01-632 2130

VETNEX games console + 10 games. Swap for Spectrum or similar computer Tel 01 732 6832

WANTED 1 Premier Delta Disc owner to exchange discs. Hints, tips for Dragon Computer Tel Rob – Staines 58787 after 6pm

Diary

Event	Dates	Venue	Admission	Organisers
Which Computer? Show (trade only)	Jan 15-17 (1985) 10.00am-6.00pm Jan 18 10.00am-4.00pm	NEC Birmingham	Free in advance from organisers	Clapp and Poliak 01-891 9891
Hi-Technology and Computers in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-6.00pm Jan 25 11.00am-5.00pm Public: Jan 26 11.00am-5.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01-930 1612
Apricot and Sirius Computer Show	Feb 5-7 10.00am-6.00pm	Kensington Town Hall London W8	Free in advance from organisers	Paradox 01 241 2354
The LET '85 International Trade Show	Feb 17-18 10.00am-6.00pm Feb 18 10.00am-4.00pm	Olympia 2 London W8	Free in advance from organisers	Tunnel Wheatland 2834 777000

Readers' Chart No 6

1	(1)	Knight Lore *(Spectrum)*	**Ultimate**
2	(2)	Daley Thomson's Decathlon *(Spectrum/C64)*	**Ocean**
3	(3)	Ghostbusters *(Spectrum/C64)*	**Activision**
4	(4)	Underwurlde *(Spectrum/C64)*	**Ultimate**
5	(7)	Elite *(BBC/Electron)*	**Acornsoft**
6	(5)	Booty *(Spectrum/C64)*	**Firebird**
7	(6)	Beachhead *(C64)*	**US Gold**
8	(–)	Pyjamarama *(Spectrum/C64/Amstrad)*	**Mikro-Gen**
9	(–)	Manic Miner *(Spectrum/C64/Amstrad/Dragon/MSX)*	**Software Projects**
10	(–)	Staff of Karnath *(C64)*	**Ultimate**

Week 6 No winner.

Now voting on week 8

Each week Popular is compiling its own special software top ten chart – compiled by **YOU**.

All you have to do to vote is to fill in the form below with the names of your current three favourite software titles (or copy the form on to another sheet if you don't want to damage your magazine) and send it off as soon as possible to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 8 closes at 2pm on Wednesday January 16 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 8**
Address .... 1. ....
.... 2. ....
.... 3. ....

BLAST-A-MINUTE

This new release is addressed to those five people who still have and use a ZX81, so it's definitely select minority time. Those people who buy games for the ZX81 at all must surely already be collecting the Software Farm games with a religious fervour

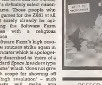
Software Farm's high resolution routines strike again in *Z-Xtricator* which is apologetically described as 'more of a standard *Space Invaders* type of game' which 'does not give much scope for showing off the high resolution' – such honesty will make you bankrupt

The game is basically a blast-a-minute, wave and waves of aliens affair You have to pilot a ship down to a plane surface, pick up some survivors and return to the top of the screen defending yourself for the combined assaults of various hi-res aliens There isn't much else to it, but then there never is to such games, so what do you expect. And anyway, let's not discourage the only software house currently (to my knowledge) producing ZX81 software that can even loosely be described as of commercial quality

The company also runs a ZX81 software club more details from the address below



Program *Z-Xtricator*
Price *£5 95*
Micro *ZX81 16K*
Supplier *Software Farm*
155 Whiteladies Road
Clifton
Bristol BS8 2RG



BEEFED UP

The question of which version of chess for the Spectrum is the most powerful I shall leave to those who don't always get thrashed on novice level.

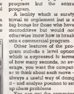
However, one of the neatest and fullest featured versions I've seen is *Superchess 3 5* by Deep Thought and being distributed by CP Software

The main feature of the program, which is a beefed-up version of an earlier program, is a save to microdrive facility – not only games in progress but the entire program.

A facility which is surely trivial to implement but is a big bonus for those who have microdrives but would not otherwise know how to break into a commercial program

Other features of the program include a level option which is expressed in terms of how many seconds, on average, you want the computer to think about each move – always a useful way of doing it – and analyse position to set up chess problems

You can get the computer to work out a mate in between one and four moves, change the colours and it will tell you the moves it is thinking of and how many levels of play it has analysed so far

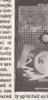


Program *Superchess 3.5*
Price *£9 95*
Micro *Spectrum*
Supplier *CP Software*
2 Glebe Road
Uxbridge
Middlesex
UB8 2RD

Pick of the week

PRETTY COSMIC

Since very many people may have bought or been bought records at Christmas, the timing of *Psychedelia* probably couldn't have been better Jeff Minter's program brings you the experience of an early 70's rock concert (Hawkwind for example) in your very own home and under your control Actually *Psychedelia* gives you more than that, the possibilities are pretty cosmic actually, man.





Psychedelia has been termed a Light Synthesiser and that seems as good a description as any – you can manipulate multi-coloured patterns of ever changing light using a joystick The program is much easier to use than explained. Roughly speaking, you start with a number of presets which select basic shapes by moving a central cursor around and by pressing fire you can generate this effect anywhere on the screen. Because the effect has a temporal element (like a decay in music) the patterns overlay one another, intermingle and form complex, somewhat symmetrical patterns which change from moment to moment

But its more complicated than that – there is a sequencer effect which lets you create, store and replay endlessly up to half an hour's worth of pattern and then create 'live' patterns over the top There are all sorts of other controls for 'pulsing', 'burst generators' etc, etc – but as Jeff Minter says in his program notes the best thing is just to try it all out and see what happens.

Amazingly inventive and with the lights out and music, well . . . awesome probably

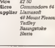
Program *Psychedelia*
Price *£7 50*
Micro *Commodore 64*
Supplier *Llamasoft*
49 Mount Pleasant
Tadley
Basingstoke
Hants

AN IN-JOKE

Remember The *Quest for the Holy Joystick?* The game was a Quilled text adventure which was notable for, amongst other things, featuring the computer buffs' favourite places, eg, ZX Microfairs at Alexandra Palace and the Automata Stand – even Tony Bridge

Now we have the sequel which features parodies of many well known adventures, including *Sherlock*, and the Ultimate Sabre Man character – and, well, pretty much anything you can think of.

The game has been created with the addition of the new *Illustrator* – the *Quill* utility which provides graphics for your Quill text adventure – this is used to make the parodies that bit more complete, eg, the Baker Street entrance of *Sherlock* is faithfully recreated.



Although it does work as an adventure – there are objects, clues and conundrums that will eventually lead you to the legendary joystick itself – the real point is, I suspect, a series of in jokes

Apparently, even I am in it (now I know how the wax dummies in Madame Tussaud's feel), as are the *Popular* offices which are the biggest and most challenging maze you'll ever come across.

New Releases

Program *Return of the Joystick*
Price *£4 95*
Micro *Spectrum*
Supplier *Delta 4 Software, The Shieling, New Road, Swanmore, Hants SO3 6PE*

A CLASSIC

The really surprising thing about *Lords of Midnight* on the Commodore 64 is how exactly similar it is to the Spectrum version. Not only are the rules, characters and plot the same, but even things like the exact graphic shapes, text font and so on are indistinguishable. The only difference is the addition of a sun which travels the sky as time goes on, setting red as the day ends.

I'm sure most Commodore owners will already be familiar with the game and indeed will have been awaiting this release eagerly. Nevertheless I'll summarise the idea.

The game mixes adventures and wargames in a battle between assortments of goodies, baddies and maybes who can perhaps be recruited to your cause. You can win the game either by a massive wargames style control of forces or by an adventure style quest using a few of the characters to destroy the wicked Ice Crown.

The game features detailed and evocative still graphics which – unlike usual graphic adventures, are logical in terms of direction, ie, if you see a tower in the far north and continue to go north eventually the tower will get bigger and bigger until you arrive at it. The game can require a number of different skills from adventure style investigation and perseverance to strategy control and organisation. The computer controls the baddie forces and plays well. An excellent adaptation of a classic program.

Program *Lords of Midnight*
Price *£9 95*
Micro *Commodore 64*
Supplier *Beyond Software, Lector Court, 153 Farringdon Road, London EC1R 3AD*

NO BAGATELLE

Whatever else is true *Island of Xaan* must be the only adventure to come with a freebie that is worth having. If you buy this text adventure within a certain period of time you get a neat little Adventurers' notebook with different coloured paper in which to record your failures, wrong guesses, wrong directions and the like. As mere bagatelles go, it's less mere than most.

The adventure is simple in format – text only, and in the two-word *Do Get Look* style, although different sections of text are printed in different colours. The idea is to escape from imprisonment on the isle of the title and finally, wearing a disguise, get off the island completely.

What it lacks in graphics it makes up for in lengthy scene setting descriptions. I doubt the BBC has much spare memory when running this one. The opening has you dumped in a cell with no windows and a locked door. Classic 'how on earth do I get out if I can't find anything' stuff. However, an alcove reveals a chain, and with a lot of effort the chain comes loose. My bet is that its function is violent but you wouldn't want me to spoil it for you, would you? It'll need more time than I've been able to give it but I suspect this could prove to be one of the best text adventures on the BBC.

Program *Island of Xaan*
Price *£7 95*
Micro *BBC*
Supplier *Robico Software, 3 Fairland Close, Llantrisant, CF7 8QH*

TORTUOUS MAZE

Zaga Mission is a sort of *Zaxxon* with a helicopter instead of a plane and with the accent firmly on negotiating the tortuous twisting 3D maze rather than fighting it out with the baddies.

Flying helicopters requires a quite different set of skills from the usual up, down, forward, backward, left, right – the latter two movements have to be carefully judged and tend to involve drift. Going forwards seems even more fraught with difficulties.

The mazes on *Zaga Mission* are much more complex than anything in *Zaxxon*; often it's a matter of inching forward and clearing giant brick walls by tiny amounts. Not that you get all day to master each section of maze – a time limit is created by the need to refuel frequently and the chances to do this are few and far between.

Graphically it's good – the helicopter is particularly well done – although the brick walls are coloured such that the correct perspective is often difficult to assess, possibly intentionally. I sweated over it for quite a while, anyway.

Program *Zaga Mission*
Price *£7 95*
Micro *Commodore 64*
Supplier *Anirog Software, 29 West Hill, Dartford, Kent*

BLOOD CURDLING

Castle of Terror is a new graphics adventure from Melbourne House. With the recent release of *Sherlock* it has tended, despite many ads, to be a bit ignored but it is actually one of Melbourne's best releases ever.

The graphics are among the most detailed ever seen on the Commodore, and despite this they are drawn

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Black Phoenix	Ad	Amstrad	£4.95	Gavin Barker
Portfolio	Ut	Atmos	£22 50	Financial + Gen
Pixel Potter	Ut	BBC	£14 95	Toad
School Database	Ut	BBC	£39 95	Toad
Castle of Terror	Ad	Commodore 64	£9 95	Melbourne Hse
Empire of Karn	Ad	Commodore 64	£7 00	Interceptor
Indiana + Lost Kdm	Arc	Commodore 64	£9 95	US Gold
Monsters	Arc	Commodore 64	£6 95	Discus
Afghan Attack	Ad	Spectrum	£9 99	Southern
Happy Hippy	Ad	Spectrum	£3 99	B Goldie
Heroes of Karn	Ad	Spectrum	£6.00	Interceptor
16 Great Games	Arc	Spectrum	£7.00	Infinite
Hypertron	Arc	Spectrum	£1.46	Kevin Madden
Heathrow Internat	S	Spectrum	£7 95	Hewson
Starboard	S	Spectrum	£6 99	Infinite
Character sets	Ut	Spectrum	£3 99	Infinite
Finance manager	Ut	Spectrum	£9 95	Elephant
M S W M	Ut	Spectrum	£2.99	Infinite
M/code sound library	Ut	Spectrum	£3 99	Infinite

quickly enough to avoid irritation. More than that, in places they are animated. Not, I should add, in the *Valhalla* sense of characters wandering about, but small sections of each picture move to give a heightened sense of realism to each scene

Apart from the graphics, the game also uses the Commodore's sound facilities to something like the degree I've always felt they ought to be used in adventures Since this adventure is called *Castle of Terror* you can guess that there is much creaking of doors and other mysterious clankings. The game is set in 1800 in a little village near an imposing castle where lives a Count with a strange taste in thirst quenchers Like *Sherlock*, the program comprehends complex sentences where more than one instruction is strung together, eg, *Get the Axe and the Knife and put them in the sack* Also, the irritation that comes from knowing exactly what you want to happen but the computer stubbornly refusing to understand any of your synonyms is largely soothed by an option to display the action verbs the program understands at any point in the game

Basically, if you like adventures and have a Commodore 64 you'll have no reason not to buy this one

Program *Castle of Terror*
Price *£9 95*
Micro *Commodore 64*
Supplier *Melbourne House*
Castle yard House
Castle Yard
Richmond
TW10 6TF

TACTICAL WAR

Afghan Attack is a sophisticated text adventure game for the Spectrum from Southern Software It posits your intervention as commander of a group of British paratroopers in the Soviet/*Afghan* war You must disrupt Soviet troop movements, harass their supplies and generally make things difficult for the ungodly Commies

The adventure is divided into two large sections and consists of more than just the usual adventure features. There are some tactical elements as you try to deploy your men correctly and you will frequently need to communicate with other characters.

An immediate criticism must be of the basic level of English in the adventure At £9 95 it has to be a professional product and the changes of the tense for no reason difficult to read screen layout and naff phraseology, eg, "his face cracked into a smile", which is about the same as, bashing into a grin. But enough of this irrelevant level of criticism – what about the game?

Firstly it may be *Quilled* which means nothing in particular but gives you an idea of how the game looks on screen It's also tough, or at least begins with a seemingly difficult conundrum One bug appeared when I tried one obvious option of *Load Weapons* as first command. The screen went red and blue and the thing thought it had to load a program.

The solution to the first problem really is easy when you think about it and after that there is much to explore I think the game probably will prove to be addictive and at least somewhat original

Program *Afghan Attack*
Price *£9 95*
Micro *Spectrum*
Supplies *Southern Software*
6 The Hillway
Fareham
Hants PO16 8BL

SPOOKS AROUND

Spooky Manor is a new Acornsoft program that looks vaguely like an adventure but is really a kind of educational program for up to four kids

The screen is divided up into four sections with each player's 'adventure' occurring in each one, therefore in some locations one player might meet another The usual commands are understood – *Take, Open, Unlock*, etc If one player finds something and drops it, another player may come across it and pick it up – in some locations more than one player is necessary to complete an action.

The idea is for each player to collect as much treasure as possible, and no player may escape until the ghosts that haunt the manor have been banished – by the removal of one particular treasure.

The idea is excellent although obviously the way each player has to take it in turn to enter instructions is somewhat clumsy BBC adventurers with at least one friend should give it a look.

Program *Spooky Manor*
Price *£9 95*
Micro *BBC*
Supplier *Acornsoft*
Betjeman House
104 Hills Road
Cambridge

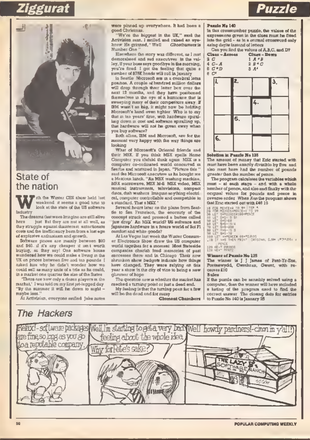
Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly*, 12 13 Little Newport Street, London WC2H 3LD

This Week

8 Goldie, 211 Mul Petersburn Airdrie Scotland ML6 8DP **Discus**, Freepost Windmill Hill Brixham TQ5 9BR **Elephant**, Ashlea Jepps Lane, Barton Preston, Lancs PR3 5AQ 0772 864972 **Financial + Gen**, FGC Meadowcroft, Euxton, Chorley, Lancs PR7 6BU 02572 70066 **Gavin Barker**, 12 Fleming Field Shotton Colliery County Durham DH6 2JF 0783 261405 **Hewson**, 7 Grahame Close Blewbury, Oxon OX11 9QE, 0235 832939 **Interceptor**, Interceptor Micro s Lindon House The Green, Tadley Hampshire 07356 71145 **Kevin Maddon**, 8 Pine Dale, Rainford, Merseyside WA11 8DP **Melbourne House**, 39 Milton Trading Estate, Abingdon, Oxon OX14 4TD 0235 835001 **Southern**, 6 The Hillway Fareham Hants PO16 8BL **Toad**, 8 Wealbourne Grove, Sale Cheshire M33 1RP, 061 969 4740 **US Gold**, US Gold Unit 10 The Parkway Ind Centre, Heneage Street Birmingham B7 4LY, 021 359 3020

This Week is a new section that covers all the new software coming on to the home micro market each week All suppliers should send details of their new programs to This Week *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 3LD



State of the nation

With the Winter CES show held last weekend it seems a good time to look at the state of the US software industry

The dreams that were Imagine are still alive here just But they are not at all well, as they struggle against disinterest extortionate costs and the inefficiency born from a lost age of explosive enthusiasm and growth.

Software prices are mainly between $30 and $40 if it's any cheaper it isn't worth buying, as they say! One software house wondered how we could make a living in the UK on prices between five and ten pounds I asked him why he didn't wonder how we could sell as many units of a title as he could, in a market one quarter the size of the States

'There are now only a dozen players in the market,' I was told on my first jet-lagged day "By the summer it will be down to eight – maybe less."

At Activision, everyone smiled Joke notes were pinned up everywhere. It had been a good Christmas.

"We're the biggest in the UK," said the Activision man. I smiled and raised an eyebrow He grinned, ' Well *Ghostbusters* is Number One "

Elsewhere the story was different, as I met demoralised and sad executives in the valley, if your boss says goodbye in the morning, you're fired I got the feeling that quite a number of $75K heads will roll in January

In Seattle Microsoft sits in a cerebral lotus position. A couple of hundred million dollars will drop through their letter box over the next 12 months, and they have positioned themselves in the eye of a hurricane that is sweeping many of their competitors away If IBM wasn't so big, it might now be holding Microsoft's hand even tighter Who is to say that in ten years' time, with hardware spiralling down in cost and software spiralling up, that hardware will not be given away when you buy software?

Both allies, IBM and Microsoft, are for the moment very happy with the way things are looking

What of Microsoft's Oriental friends and their MSX. If you think MSX spells Home Computer you should think again MSX is a computer co-ordinated world conceived in Seattle and nurtured in Japan. "Picture this" said the Microsoft executive as he bought me a Mexican lunch. "An MSX washing machine, MSX microwave, MSX hi-fi MSX video, MSX musical instruments, televisions, compact discs, dish washers Imagine anything electrical, computer controllable and compatible in a standard. That's MSX '

Several hours later on the plane from Seattle to San Fransisco, the enormity of the concept struck and pressed a button called 'jaw drop' An MSX world? US software and Japanese hardware in a future world of Sci Fi comfort and white goods?

At Las Vegas last week the Winter Consumer Electronics Show drew the US computer world together for a moment Most Stateside companies cherish fond memories of past successes there and in Chicago Their now shrunken show budgets indicate how things have changed. They were relying on this year's show in the city of vice to bring a new glimmer of hope

The question now is whether the market has reached a turning point or just a dead end.

My feeling is that the turning point for a few will be the dead end for many

Clement Chambers

Puzzle No 140

In this crossnumber puzzle, the values of the expressions given in the clues must be fitted into the grid – as in a normal crossword only using digits instead of letters

Can you find the values of A,B,C, and D?

Clues – Across
2 C
4 $C-A$
5 $C*D$
6 C^2

Clues – Down
1 $A*B$
2 $B*C$
3 A^4

1.	2.		3.
		4.	
	5.		
6.			

Solution to Puzzle No 135

The amount of money that Eric started with must have been exactly divisible by five and also must have had the number of pounds *greater* than the number of pence.

The program calculates the variables which must – at each stage – end with a whole number of pence, and also end finally with the original values for pounds and pence in reverse order When *Run* the program shows that Eric started out with £48 15

```
10 FOR PENCE=0 TO 99 STEP 5
20 FOR POUNDS=PENCE+1 TO 99
30 LET S=POUNDS*100+PENCE
40 LET S=S-(S/5)
50 LET S=S-60
60 LET S=S-15/4
70 LET S=S-200
80 LET S=S-(S/3)
90 LET S=S-70
100 LET X=PENCE*100+POUNDS
110 IF X=S THEN PRINT "ORIGINAL SUM ";POUNDS;" ";
    PENCE
120 NEXT POUNDS
130 NEXT PENCE
```

Winner of Puzzle No 135

The winner is J J James of Pant-Yr-Eos, Pontnewydd, Cwmbran, Gwent, who receives £10

Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer The closing date for entries to Puzzle No 140 is January 25

The Hackers



ADVERTISEMENT

MEL AND CHRISTIAN ARE STILL ON THEIR XMAS BREAK

AUTOMATA'S LOONY MAIL ORDER SALE!

YOU WAIT TIL THEY GET BACK! THEY'LL GO STARK RAVIN' MAD, THEY WILL!! THEY'LL HAVE YOUR GUTS FOR GARTERS AND MY GARTERS FOR GUTS"

THAT'S ROT! THEY'LL BE GRATEFUL TO US FOR CLEARING ALL THE STOCK WE DON'T HAVE TO TELL 'EM HOW MUCH WE'RE KNOCKING OFF! ANYWAY, THEY SHOULDN'T TAKE SUCH LONG HOLIDAYS!

SWING

"I'VE GOT ALL THE GANG OUT PROMOTING IT... RASTAPIMAN AND PIANA ARE DOING A MARATHON BREAKDANCE IN THE HIGH STREET

SMESHK

O'SHEA!

PIANA, YOU'RE NOO TO DEES GYEM, BUT TIS NOT WAH DEY CALL IT BREAKDANSHIN

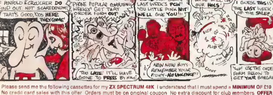
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